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FOREWORD

The *United States Armed Forces Medical Journal* is the medium for disseminating information of administrative and professional interest to all medical personnel of the Department of Defense. The Assistant Secretary of Defense (Health and Medical) and the Surgeons General of the several services invite all medical officers, dental officers, Medical Service Corps officers, Nurse Corps officers, and officers of the Veterinary Corps of the Armed Forces, and the medical consultants of the Army, Navy, and Air Force to submit manuscripts for publication in this *Journal.*

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Monthly Message

Of the important changes made in the Department of Defense Blood Program during the past year, the most significant one has been the approval of dextran as a plasma expander by the National Research Council, the Food and Drug Administration, and the American Medical Association. The safety and effectiveness of dextran has been confirmed by extensive field tests which have clearly demonstrated that it is equal to plasma in the prevention and treatment of traumatic shock. It is also relatively inexpensive. The interest of the Department of Defense in plasma expanders is not confined to dextran. Research is continuing on other substances which give promise of being safe, effective, and inexpensive plasma volume expanders. Their production could be rapidly attained in the event of a national emergency.

The timely demand for gamma globulin in the prevention and modification of paralytic poliomyelitis prompted the Department of Defense to fractionate existing stocks of plasma into gamma globulin and serum albumin. An agreement was reached with the American National Red Cross and the National Foundation for Infantile Paralysis to purchase gamma globulin at cost.

Some of the recent publicity concerning the so-called "blood substitutes" has resulted in the erroneous belief that plasma expanders are substitutes for whole blood and that there is no further requirement for blood donations. Actually there is a continuing need for whole blood in both civilian and military hospitals because all blood which has been collected at the Armed Forces blood donor centers and Red Cross defense centers has been used for the production of plasma. With the suspension of plasma procurement, it is anticipated that these blood collection facilities will be closed or used for local requirements.

In a national emergency there will be an immediate and critical need for whole blood to meet military and civilian requirements. The Armed Forces blood donor centers will be quickly reactivated. In preparing mobilization plans, the military departments are including provisions for collecting, processing, refrigerating, and shipping whole blood. During the first few months of hostilities the primary source of whole blood for military use will be military donors. Later civilian collection and processing facilities will meet this requirement in addition to the demands in their localities.

Melvin A. Casberg

Melvin A. Casberg, M. D.
Assistant Secretary of Defense
(Health and Medical)

PSYCHIATRY IN THE KOREAN CAMPAIGN

A Historical Review (1)

ALBERT J. GLASS, *Colonel, MC, USA* (2)

THE abrupt onset of hostilities in Korea confronted us with the immediate task of providing for the prevention and rehabilitation of psychiatric casualties. A review of the problems that were encountered during the evolution of the psychiatric program that was established in the Far East Command during the first 15 months of the Korean campaign may prove useful in future planning. The material presented is derived mainly from observations made while I served as psychiatric consultant to the Surgeon, General Headquarters, Far East Command, from 1 October 1950 to 30 September 1951. Additional information was obtained from various reports and data in the Medical Section of that headquarters and personal communications with medical and line officers who were in positions of responsibility and command, especially in the early phase of the conflict. For clarity, the various levels of psychiatric activity are reported as related to the several major tactical phases that characterized this period.

A history that is written by one of its participants cannot be considered objective. This is especially true when an account follows soon after the events have occurred. Time is not permitted to show the validity of this or that procedure or decision. None of the foregoing is an apology, but rather an explanation so that the reader may more objectively evaluate the report.

THE NORTH KOREAN INVASION AND THE PUSAN PERIMETER
25 June to 15 September 1950

The well equipped and trained North Korean Communist Army suddenly invaded South Korea on 25 June 1950. As they broke through the defenses of the South Korean troops, American and other U. N. Forces were quickly thrown into the battle. By 5 July all elements of our 24th Infantry Division had been flown or shipped into southern Korea and were rushed northward to stem the Communist forces. The ensuing engagements were fluid

(1) The first of two installments.

(2) Brooke Army Medical Center, Fort Sam Houston, Tex.

as the U. N. and ROK (Republic of Korea) troops used a series of delaying actions.

Medical service within the 24th Infantry Division was limited to the initial care and evacuation of patients. This was a most difficult task because of the frequent dislocation and retrograde movements of divisional medical facilities, enemy infiltration, and guerrilla raids on supply and evacuation channels. Such a tactical situation rendered impossible and impractical any type of intradivisional treatment. The assigned psychiatrist could not function in his speciality but was used as a clearing platoon commander.

On 15 July the 25th Infantry Division moved into Korea, followed in 3 days by the 1st Cavalry Division. These fresh elements strengthened our weak position, but more enemy divisions attacked and forced a continuation of our withdrawal and delaying tactics. Intradivisional treatment was still impossible so it was not a serious deficiency that neither the 25th Infantry nor the 1st Cavalry Division had an assigned psychiatrist.

Psychiatric Casualties Not Excessive

Psychiatric casualties among United States troops were numerous but not excessive. Their incidence could even be considered low in view of the high battle casualty rate, the terror spread by enemy atrocities on the captured and the wounded, the series of apparent defeats, the overwhelming superiority of the enemy in numbers and weapons, and the confusion caused by enemy attacks on our flank and rear. Added stresses were the deleterious effects of physical fatigue caused by the excessive hot weather, lack of sleep and rest, and difficulty in obtaining adequate supplies of potable water. There were favorable psychologic factors. Men were forced to fight for survival. It was far safer to remain with the group than to become a straggler. Evacuation of a psychiatric casualty was best accomplished in a combat unit rather than through vulnerable medical facilities that were either on the move or fully occupied with the wounded. Moreover, it is characteristic for the psychiatric rate to diminish whenever there is a rapid withdrawal, perhaps because the men are drawing away from stress. Relatively low neuropsychiatric casualty rates were also observed in December when our forces made a similar strategic retreat.

Early in August with the arrival of the 1st Marine Brigade and the 2d Infantry Division the U. N. resistance further stiffened. Although limited withdrawals continued, the Pusan perimeter gradually took shape to form a definite defensive position. Thereafter our lines held, despite repeated heavy assaults and numerous penetrations by the enemy. The almost continuous

fighting in this period accounted for the highest rate of wounded and psychiatric casualties in the Korean campaign. The high incidence of killed and wounded in units which were relatively new to combat predisposed to a high rate of psychiatric casualties.

As the battle line stabilized, it became possible for divisional medical units to hold and treat mild nonbattle casualties. This step was dictated by the desperate need rapidly to rehabilitate a maximum number of casualties in order to hold the thinly manned perimeter defenses. Under these circumstances divisional psychiatric treatment began in late August when psychiatrists were assigned to the 2d, 24th, and 25th Infantry Divisions and the 1st Cavalry Division. Early in September the enemy made heavy assaults at various points of the Pusan perimeter. Severe injuries of all types were produced in our forces. Intradivisional psychiatric facilities were in full operation and from 100 to 200 patients were being cared for in each of the 4 division psychiatric treatment centers. Three of the divisions used the holding platoon of their clearing company for this purpose. The 2d Infantry Division formed a provisional type of unit, such as was used in World War II. Additional cots, litters, and other needed supplies and personnel were obtained somehow by the respective division surgeons in co-operation with other members of the divisional staff, who quickly became aware of the value of this project.

Many of the psychiatric casualties had a large element of physical exhaustion which was readily relieved by from 2 to 4 days of rest and sleep. Other patients, not as numerous, had severe reactions, such as acute disruptive disorders with dissociative states and marked startle reaction. Gross hysterical phenomena, such as blindness and paralysis of the extremities, were reported by 2 of the division psychiatrists to comprise 10 percent of their patients. Many persons had somatic complaints and showed relatively little overt anxiety, but were hostile toward any effort to remove their symptoms.

Use of Drugs

All of the division psychiatrists explored the use of amobarbital sodium or thiopental sodium interviews. One claimed that his results by this method were very successful in restoring complete function, particularly in patients with hysterical reactions. He promptly returned such patients to combat and stated that there were very few recurrences. The other division psychiatrists were not as impressed with the value of barbiturate interviews. All agreed that the employment of simple therapeutic methods, such as reassurance, explanation, and ventilation

combined with a regimen of rest, sleep, food, and short respite from stress, seemingly accomplished miraculous improvement in their haggard, apathetic, tremulous, and weary patients. The division psychiatrist quickly learned that it was necessary to use a firm, matter-of-fact approach that indicated to the patient in the initial interview that he was not disabled, but temporarily worn out; that such a reaction was logical, understandable, and common; that he would recover after a few days of rest and be ready for duty. In general, the principles of forward psychiatric treatment as stated in "Combat Psychiatry"[1] were well known by the division psychiatrists and used in their treatment programs.

The results of the divisional psychiatric centers were uniformly good; they returned from 50 to 70 percent of their patients to combat. The efforts of the 4 division psychiatrists firmly established division psychiatry in the Korean campaign. The lessons learned in World War II, the reiteration of these principles in training memoranda and other Army publications, and the invaluable inclusion of psychiatrists in the tables of organization of infantry divisions resulted in divisional psychiatry becoming operational within 8 weeks after the onset of hostilities in Korea in contrast to the delay of 2 years in instituting a similar program in World War II. It is this achievement that spurs us on to plan and make further progress because it disproves the old adage that "men learn from history only that men learn nothing from history."

Shortage of Personnel and Supplies

In contrast to divisional psychiatry, the psychiatric effort at army level was meager during this period. The 8054th Evacuation Hospital became operational at Pusan on 7 July and served as the major hospital facility for the Eighth Army. Very soon this hospital was inundated by a heavy influx of casualties. Because of a shortage of medical officers, the assigned psychiatrist had additional duties. It was impossible for him to establish an adequate psychiatric program; beds were not available for psychiatric patients because only the nontransportable sick and wounded could be held for treatment. He managed to return to duty 10 percent of the psychiatric patients received, but had to evacuate 1,800 others to Japan.

This period was one of great tension and urgency. Medical resources were poor. Supplies and personnel were scant. The evacuation and care of the wounded and severely ill got first priority, and beds for this purpose were the main concern of responsible senior medical officers. The fear that our defenses might be overrun and that helpless patients would be lost to the enemy was ever present. Thus, it seemed reasonable to move all patients out of Korea to avoid strategic complications and

keep the medical facilities free to receive the daily load of fresh casualties.

Facilities in Japan

The medical facilities in Japan also were unprepared to treat the sudden influx of casualties that began to flow from Korea in increasing numbers. Prior to hostilities, Army medical service in Japan barely met the minimum requirements of the occupation troops and their dependents. Their resources were further diminished by the transfer of medical personnel to combat units and provisional hospitals that were sent to Korea. As the first psychiatric casualties arrived in Japan on 3 July the following psychiatric facilities and professional personnel were available:

1. Tokyo. The neuropsychiatric service of the 361st Station Hospital (the neuropsychiatric center of the Far East Command) had 200 beds in open and closed wards, an electroencephalograph and an electroshock therapy apparatus. The professional staff consisted of 2 psychiatrists, 2 clinical psychologists, and several enlisted social workers and psychometricians.

2. Osaka. The neuropsychiatric section of the Osaka Army Hospital had a psychiatrist, a psychologist, a social worker, and open and closed wards which would accommodate 88 patients.

3. Fukuoka in southern Japan. The psychiatric section of the 118th Station Hospital had a psychiatrist and facilities for 60 open ward patients.

4. The 7th Infantry Division had an assigned psychiatrist.

Because of the proximity of southern Japan to Korea, most of the casualties from Korea were evacuated to the 118th Station Hospital. This unit rapidly expanded as it assumed the functions of an evacuation hospital and became the major triage point for the redistribution of casualties to other hospitals in Japan. The assigned psychiatrist was caught in the same swirling tide of patients as his counterpart in Pusan. He could do little to establish a treatment program because bed space was available only for the nontransportable sick and wounded. He was needed to assist in the care and triage of casualties. The small professional staff of the hospital often worked 24 hours a day. Only 10 percent of the psychiatric patients were returned to duty from this point; the remainder were evacuated to the 361st Station Hospital in Tokyo.

Arrival of Additional Personnel

In July, the airlift of medical personnel from the United States began to ease the critical shortage of professional personnel. On 15 July, 2 psychiatrists, along with an internist and a young

medical officer interested in obtaining psychiatric training, joined the staff of the 361st Station Hospital. As the census of psychiatric patients rose to over 500 in August and September, physical facilities at this hospital were expanded to include the detachment barracks.

The clinical findings in the psychiatric patients in this hospital were those of the war neuroses and included free-floating anxiety, noise sensitivity, major hysterical syndromes, and irritable, aggressive behavior. Observers were impressed by the frequency of severe reactions. As in World War II, the Korean campaign demonstrated that the initial severe battle action of combat units not only causes the highest incidence of psychiatric casualties, but also the largest percent of severe reactions. When units become combat hardened, both the frequency and severity of their psychiatric casualties are noticeably diminished. This resistance of most veteran combat units is undoubtedly due to the time and battle experience needed to develop group identification, to improve communication among the unit members, and to obtain the beneficial effects of leadership. All of these operate as sustaining forces that prevent the crippling effect of battle fear.

The number of psychiatric casualties who had World War II combat experience was also noteworthy. It was easy to speculate that such patients were especially sensitive to battle stress because dormant traumatic episodes were revived in a conditioned reflexlike reaction. Probably such a mechanism accounted for the prompt breakdown of the relatively few patients who had been removed from combat in World War II for psychiatric reasons. For most patients who had served successfully in combat in World War II it was simply a matter of an inevitable statistical result. Most of the troops initially sent to Korea were composed of Regular Army personnel, with a high proportion of combat veterans. Psychiatric casualties from such a group would necessarily reflect a large percent of soldiers with previous combat experience. Many line officers believed that men with former battle experience generally performed better than the newcomers to combat. These officers stressed that the casualties were high because occupation troops were unprepared, physically and psychologically for a sudden return to the rigors of severe combat in which they faced overwhelming odds.

The noncommissioned or commissioned officers who during World War II had been classified as "limited service" for mental or physical reasons were especially troublesome. When "limited service" was abolished, such persons were placed on a general-duty status with their knowledge and consent. They did well and usually had received one or more promotions. When hostilities

started in Korea they were in comfortable assignments in Japan or the United States. When ordered to Korea many, after a few days of combat or while in Japan on the way to Korea, promptly became psychiatric casualties. They exhibited marked dependency intermingled with resentment, verbalizing that an implied promise made to them had been broken by the Army which should have known of their limitations and insured their noncombat status. It is difficult to suggest a solution to such a problem unless there is established a permanent noncombat category. Yet it would be paradoxical to protect and foster a noncombat career for noncommissioned and commissioned officers in an Army whose primary mission is to prepare for and engage in combat when needed. Perhaps it would be better for such persons to seek employment in a civilian governmental agency if their primary objective is the security of a federal position.

THE UNITED NATIONS OFFENSIVE
15 September to 26 November 1950

At dawn on 15 September, X Corps, composed of the 1st Marine Division, 7th Infantry Division, and various ROK elements, began the amphibious invasion of Inchon. The marine elements rapidly secured this port city and pushed on to Seoul. On 17 September, 7th Infantry troops landed and moved south to capture Suwon. By 19 September, Marine and ROK troops had won control over the Kimpo peninsula, including the large air field, and began the assault on Seoul. The reinforced enemy gave stubborn battle for the city, which forced street-by-street and house-to-house fighting. With the aid of 7th Infantry Division elements, who attacked from the south, Seoul was finally secured on 28 September. The marines bore the brunt of the fighting and suffered heavy casualties.

Psychiatric casualties from the 1st Marine Division, which did not have an assigned psychiatrist, were numerous. All such casualties were evacuated to the hospital ship at Inchon and later to Army hospitals that became operational in the X Corps area. The comfort and safety of a hospital ship were not conducive to the return of psychiatric patients to combat hardships, despite its proximity to the combat zone and the fact that the patients were placed under treatment soon after their trauma. This is in sharp contrast to the results obtained later at a relatively primitive Army field hospital, where it was possible to return 50 percent of marine psychiatric patients to duty after from 1 to 3 days of rest and simple psychotherapy.

The 7th Infantry Division had relatively light battle casualties and consequently few psychiatric casualties resulted. A psychiatric treatment section was included in the divisional clearing company and placed under the charge of an internist because of

the shortage of psychiatrists. This deficiency was remedied early in November by the assignment of a psychiatrist.

On 16 September, the Eighth Army, the perimeter defenders, reinforced by the 27th British Brigade, began an all-out offensive to co-ordinate with the Inchon invasion. For the first few days, resistance by the enemy was stubborn and some of the most fierce fighting of the campaign resulted. By 18 September, the enemy strength began to weaken and by 20 September large holes were punched in the enemy defenses. Thereafter our mechanized and armoured troops raced northward, destroying and disorganizing the enemy forces, to join with X Corps troops in an envelopment maneuver which resulted in the capture of many thousands of prisoners and much equipment.

The number of psychiatric casualties increased for several days at the beginning of this Eighth Army offensive, then dropped precipitiously, as is usual when victorious troops are rapidly advancing and incurring few injuries. The combat troops were far ahead of their medical clearing company. In this happy tactical situation, the division psychiatric centers could not operate effectively because they were too far in the rear. It is fortunate that on such occasions there are few psychiatric patients.

On 7 October, the X Corps relinquished its sector about Seoul and Inchon to the Eighth Army, as it moved to Pusan in preparation for the next amphibious invasion. Eighth Army troops continued the attack northward against only slight opposition. On 9 October, the 38th parallel was crossed. Eighth Army troops exploited the tactical situation, by-passing enemy troops and rapidly advancing in North Korea against some increase of enemy opposition. By the end of October, U. N. forces were above Pyongyang, where the first serious enemy resistance was encountered. On 20 October, X Corps elements began landing at the captured city of Wonsan on the coast of northeast Korea and, on 29 October, the 7th Infantry Division made an amphibious landing at Iwon, 178 miles up the east coast from Wonsan.

Morale High

It was not surprising that morale in October was high. The tables had been quickly and almost miraculously turned and everyone expected that soon the fighting would be over and the return to comfortable Japan accomplished. Rumors were rife as to this or that unit returning to Japan. The psychiatric casualty rate of October, the lowest of the Korean campaign, reflected the low incidence of battle casualties and the optimism that pervaded all ranks.

The X Corps forces were increased by the addition of the 3d Infantry Division, the first elements of which disembarked at Wonsan early in November. This division was unique in that it arrived with 2 assigned psychiatrists.

In November the further gains of Eighth Army and X Corps became increasingly limited because of stiffening enemy resistance, the difficulties of maintaining adequate logistical support to the forward troops, and the onset of the numbing effects of the North Korean winter. With the increasing enemy activity, a moderate increase in the number of psychiatric casualties occurred as the optimism of the previous month began to wane. The Eighth Army continued to advance above Pyongyang, and X Corps expanded its control over a large area in northeast Korea, including the Chosin Reservoir district. By 25 November, with the Eighth Army from 75 to 80 miles above Pyongyang and the X Corps anchored at the Manchurian border on the east, the U. N. forces were ready for a final offensive by elements of the 7th Infantry Division which was in readiness to wheel westward and co-ordinate with the northward push of the Eighth Army.

Surveys of the various divisional psychiatric programs revealed that although division surgeons appreciated the treatment role of the division psychiatrist, they were unaware of or resisted his function in preventive psychiatry. For this reason and because most of the psychiatrists were unfamiliar with this aspect of their duties, they remained at their clearing stations and confined their efforts to the treatment and evaluation of referred or evacuated patients. To remedy this deficiency, discussions were held with the various division surgeons. The division psychiatrists were receptive and eager to implement a preventive program. It was agreed that when conditions permitted they would make periodic visits to the various battalions and other divisional units to aid in the psychiatric orientation of units and to establish a spirit of friendly co-operation. Whenever possible, the psychiatrists gave indoctrination talks to line officers. In general, a program of psychiatric prevention was implemented along the lines set forth in "Combat Psychiatry," *(3)* copies of which were distributed and became the "Bible" of psychiatrists in Korea.

Administrative Problems Solved

Two administrative problems, associated with forward psychiatry, were satisfactorily solved in October. The *first* concerned the diagnosis of combat psychiatric casualties. All types of designations had been used, from shell shock to psychosis, including the ubiquitous psychoneurosis-anxiety state. This practice caused a similar iatrogenic trauma to patients and the

semantic confusion among medical officers that was present in the early years of World War II. An Eighth Army directive was issued implementing the use of the term "combat exhaustion," to designate all psychiatric casualties in combat troops, as prescribed in current Army Regulations. The *second* difficulty was also resolved when all infantry divisions were directed to submit a biweekly psychiatric report. The form used was identical with that used in World War II. The divisional psychiatric reports became an important part of the effort to expand the divisional psychiatric program. Such reports inevitably pinpointed differences in the various divisional elements and caused commanders to raise questions. As in World War II, the reports became powerful levers for interest and research in preventive psychiatry.

For 10 days prior to leaving the 24th Infantry Division, the psychiatrist worked jointly with his replacement. During that time the incoming psychiatrist was oriented on local problems and personalities in the division and indoctrinated on the treatment and management of combat psychiatric casualties. Visits were made to the various divisional units. By this means the departing psychiatrist succeeded in transferring the prestige of psychiatry in the division to his successor who further developed the divisional program. This orientation of the incoming psychiatrists became a standing operative procedure.

A marked improvement in psychiatric facilities at army level was also taking place. The rapid forward movement of the combat troops in September and October left the hospitals in Pusan too far rearward for proper support. The 121st Evacuation and the 4th Field Hospitals that supported the X Corps had become operational in the Inchon-Seoul area and were better situated to serve the combat troops. The 121st Evacuation Hospital ceased operations early in October to move with other X Corps elements to Pusan. The 4th Field Hospital remained at its site between Inchon and Seoul. Arrangements were made to form a team of 2 psychiatrists in this unit which would serve as an Army center for psychiatric casualties. This plan was implemented late in October. Adequate facilities, up to 100 beds, and enlisted medical personnel were made available.

The 2 psychiatrists established a treatment program, trained the needed enlisted attendants, and by the end of October were in full operation. They demonstrated that 80 percent of all psychiatric patients received could be returned to duty.

On 1 November the 171st Evacuation Hospital became operational for the first time in Pyongyang. Because of its forward location, it soon was receiving many casualties of all types. The assigned psychiatrist began to implement a treatment unit, but most psychiatric casualties were sent to the 4th Field Hospital.

Plans were made to establish more army psychiatric support in forward areas for the forthcoming U. N. offensive and a psychiatric team that would operate at the 64th Field Hospital in Pyongyang was selected.

Early in November the 121st Evacuation Hospital again became operational at Hamhung and became the neuropsychiatric center for the X Corps. The assigned psychiatrist had benefited from his experience at Inchon and had developed an effective treatment unit.

Reorganization of Facilities in Japan

A reorganization of psychiatric facilities in Japan was initiated. The procedure of concentrating the bulk of psychiatric evacuees from Korea at the 361st Station Hospital proved to have serious disadvantages from the standpoint of treatment and disposition. Many of the psychiatric patients were adversely affected by the setting of this hospital and either maintained a stubborn persistence of symptoms or developed more severe manifestations of them than were previously noted. This resistance toward improvement and return to duty is not surprising when the comfortable atmosphere of a fixed hospital, situated in peaceful Tokyo, where pleasures abound, is contrasted with the monotonous, primitive, and hazardous existence in Korea. In addition, these patients could readily observe and envy the frequent evacuation to the United States of other psychiatric patients who were apparently being rewarded by being sent home for their persistent or severe manifestations of mental illness.

It should not be assumed that this apparent reward for illness was in any large degree unconscious to the patients concerned because such matters were openly discussed among them and frequently brought forward by them in their treatment interviews. The concentration of patients who had similar battle experiences, symptoms, conflicts, and desires at the 361st Station Hospital tended to foster a negative group attitude toward return even to noncombat duty. Patients reinforced each other in justifying their complaints and contaminated the new patients with stories that "nothing was being done" for them and indoctrinated the newcomer on what the "score" was in the institution.

The psychiatric casualty when evacuated to Japan was especially vulnerable to group suggestion. Separated from the positive motivating forces of his combat unit and often tortured by guilt for leaving them, he was figuratively alone with his conflict and readily seized on any support which would aid his symptom defense because it was the only excuse he had for his patient status. The group of hospital patients who had similar problems and needs offered him such support. Their presence

and numbers gave him some justification for his symptoms and facilitated the projection of painful self-directed criticism outward to the hospital personnel and others who had not endured the hardships and stresses of combat and therefore could not appreciate and understand his problems. The therapeutic efforts of the psychiatrists were almost wholly directed at reducing the secondary gain factors. The irritability of the patient and the doctor would rise as they talked at cross purposes about this or that symptom. In truth, it was difficult to establish positive rapport for the therapist had little to offer the patient compared with the tangible benefits of remaining disabled. Thus, the intrapsychic conflict and its manifestations brought about by realistic battle stress were displaced to a hospital setting which became the new battleground as the patient with the support of his hospital fellows fought to maintain the dubious but definite gains of neurotic invalidism.

Any efforts to minimize or correct the errors of psychiatric treatment in Japan necessarily were concerned with ways and means of decreasing the admission of ambulatory nonpsychotic mental patients to fixed medical installations. The first step in this direction had already been taken by an improvement of the psychiatric program in Korea, particularly the establishing of effective psychiatric treatment at the Eighth Army level. This salvaged for duty many patients who previously would have been evacuated to Japan. The next step was to limit the transfer of patients to the 361st Station Hospital from other areas in Japan, particularly from the 118th Station Hospital in southern Japan which received most of the Korean evacuees. This could be done by the institution of a psychiatric consultation and treatment unit in southern Japan. Finally, it was planned to establish psychiatric consultation and treatment units at various strategic locations in Japan to circumvent the wholesale transfer to the 361st Station Hospital of patients who showed no apparent evidence of organic disease. In general the purpose of the entire effort was to decentralize psychiatric facilities to the periphery in order that patients could be treated earlier and as near as possible to the source of their difficulties. By this scheme, patients from Korea would be evaluated and treated at whatever installation they first reached in Japan. Psychiatric problems that arose from troops in Japan could also be treated locally, preferably on an outpatient basis. In effect, the psychiatric program in Japan would duplicate that of Korea where division psychiatrists represented a decentralized method of the treatment near the origin of the patient's emotional conflict. Secondary gain factors would then be diminished with a consequent greater effectiveness in therapy. The 361st Station Hospital would be retained as a neuropsychiatric center but would be used mainly

for psychoses, severe neuroses, and neurologic or other problems that required full-time hospital inpatient care or investigation.

The additional psychiatric personnel needed to implement such a program began to arrive early in October when 4 psychiatrists, a neurologist, and a psychiatric social worker were assigned to the Far East Command.

Orientation of New Arrivals

The new arrivals were temporarily assigned to the 361st Station Hospital for a period of orientation in the psychiatric problems of the command. The aptitude and competence of the recent arrivals were evaluated. This period of orientation later became a regular feature for all incoming psychiatric personnel. Such a policy made for uniformity in methods of treatment and criteria for the disposition of patients and facilitated the transition from civil to combat psychiatry. The fact that most of the new men were relatively young in age and experience, eager to learn, and willing to consider other viewpoints and methods of therapy, made the task of indoctrination far easier than if older and more experienced psychiatrists with fixed opinions and methods had been involved.

As part of the intended decentralization of psychiatric facilities in Japan, an arrangement was made early in November to permit the psychiatric section of the 118th Station Hospital to have a minimum of 30 beds for short-term treatment of psychiatric patients.

Further efforts toward decentralization were made by assigning an additional psychiatrist, a neurologist, and a clinical psychologist to the Osaka Army Hospital. An electroshock therapy machine would enable the enlarged psychiatric facilities to render treatment similar to that given at the 361st Station Hospital. The transfer of patients from the Osaka area to this hospital would be unnecessary, especially since evacuation to the United States could be accomplished directly from Osaka.

The lack of psychiatric facilities in the Yokohama area was remedied in November by the arrival of the 141st General Hospital which established an outpatient psychiatric consultation and treatment center.

Nonconvulsive Shock Therapy

A consultant to the Surgeon General, in neuropsychiatry, arrived in the Far East Command in November for a 30-day visit. He was interested in determining whether nonconvulsive shock therapy was beneficial in the treatment of combat neuroses. He had a Reiter type of apparatus and indoctrinated various staff

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members of the 361st Station Hospital in the technic of nonconvulsive treatment. His preliminary results were encouraging. Twenty patients, recently evacuated as combat psychiatric casualties from Korea, were selected and given daily nonconvulsive therapy for from 7 to 10 days. About 50 percent of these patients showed varying degrees of improvement. The psychiatrists of the 361st Station Hospital thought that this type of therapy was of limited value because similar results could be obtained by the usual methods of treatment with less inconvenience to the patients and hospital personnel. The only patients available for this treatment were those with relatively fixed character disorders aggravated by battle stress. Such patients are made even more refractory to treatment by the known gains of psychiatric illness. It was perhaps too much to expect that any rapid somatic therapy could alter basic personalities, particularly in an adverse environment. Patients more suitable for this type of therapy were not available because the incidence of psychiatric casualties was low in October and November and effective forward psychiatric treatment had been established in Korea. Psychiatric casualties who possessed relatively good motivation and a more stable personality were returned to duty from treatment units in Korea. Those with a more disturbed personality were evacuated to Japan. Because of the efficient forward methods of psychiatric treatment, it is doubtful that nonconvulsive shock therapy could be of any practical value in the early phases of emotional breakdown in combat. The time required for such treatment militates against its success because from 2 to 4 days is the optimum period for the best results in forward areas. Even the patients with severe manifestations who were returned to Japan showed more consistent improvement in a convalescent setting than those receiving formal treatment of any type given in a comfortable fixed-hospital atmosphere.

Study of Japanese Encephalitis

In November, a study of the residual cerebral dysfunction from Japanese encephalitis was initiated at the 361st Station Hospital under the supervision of a senior psychiatrist. Three hundred soldiers, mainly from combat troops in Korea, had developed the disease in the late summer and early fall of 1950. Death occurred in 10 percent of these patients. The more severely ill had an acute onset with headache, stiff neck, and fever, followed rapidly by an altered sensorium, confusion, delirium, and coma. The acute febrile phase was present for from 7 to 10 days, during which time constant nursing care, attention to nutrition, and the insurance of an open airway were crucial in sustaining life. In favorable cases, the patient's temperature returned to normal by lysis, leaving many victims in a more or

less vegetative mental state following which there was a gradual but striking improvement. Two hundred patients who had recently recovered from the febrile stage were gathered together at the 361st Station Hospital, and 30 of this group, who exhibited severe loss of mentation, were evacuated to the United States. The remainder were exhaustively studied for residual brain damage by neurologic examination, serial electroencephalograms, psychologic tests, and psychiatric evaluation, including a complete background history. Most of the patients examined were returned to a limited-duty status and were stationed in the Tokyo area. After discharge from the hospital, subjects in this study were re-evaluated at 3-month intervals for 6 months. The common symptoms were headache, irritability, and a feeling of tension, much like those of the well-known posttraumatic concussion syndrome. Little organic residue was demonstrated. After return to duty, the persistence of symptoms largely depended on the adjustment made in their assignment.

The severity of the clinical course of the disease bore no relationship to the headache or tension. Preillness personality and motivation for duty were apparently the pertinent factors that determined the persistence of complaints. Outpatient psychiatric therapy and support were of great value in facilitating adjustment to the resumption of duty. The ubiquitous secondary gain in illness was strongly evident in the rehabilitation of these patients and the semantic disadvantages inherent in the word "encephalitis" was an important element.

REFERENCE

1. Combat Psychiatry. Supplemental Number, Bull. U. S. Army M. Depart. Vol. 10, Nov. 1949.

PHYSICIAN POPULATION OF THE NATION

The physician population in the United States reached an all-time high of 214,667 in 1952. During last year 151,363 physicians were engaged in private practice, 6,677 were in full-time research and teaching, 28,366 were interns or residents, or in hospital administration, 20,095 were in government services, and 8,166 were retired or not in practice. The increase of 110,700 physicians from 1935 to 1952 has been attributed to accelerated programs in medical schools, expanded medical facilities, and the licensure of foreign-trained physicians. There was a net increase of 2,987 physicians during 1952.

SINGLE-STAGE ENDODONTIA

HARRY QUINT, Jr., *Captain, DC, USA*

PROBABLY the most common deterrents to the closed endodontic therapy are the number of patient sittings necessary to render the canal sterile and the exacting operation of its obliteration by filling. Since the introduction of root canal therapy many methods have been devised for sterilizing the canal, the latest and probably the most effective being the use of antibiotic pastes.[1]

Although securing a negative culture by this method is not a great problem, the endodontist must spend 2½ hours of chair time in treating and filling the root canal of an anterior tooth. This is still almost as tedious and exacting an operation to the average practitioner as it was in the early days of endodontic therapy.

In the military service it is not practical for patients to make numerous prolonged visits for root canal treatments prior to its obliteration by filling. Training schedules and other duties interfere so that root canals under treatment frequently cannot be cultured and medicated as scheduled, and the shortage of dental personnel precludes this time-consuming treatment.

As a consequence, many nonvital and infected teeth are justifiably extracted because if left untreated they might be detrimental to a soldier's health and impair his military proficiency at a time when he is most needed.

No prosthesis can match the comfort and efficiency of a natural tooth, and in many patients whose oral hygiene is poor, such an appliance may increase caries and aggravate disturbances of the investing tissues. Nonetheless, many prostheses are constructed at great cost to the government.

Anterior tooth prosthesis may often be avoided by the application of root canal therapy, and in many patients if prosthesis is necessary, strategic abutment teeth can be safely retained for a partial denture. Often the retention of a cuspid tooth in the arch will determine the difference between a successful or an unsuccessful partial denture.

An endodontic technic that will aid in solving these problems and save time for the dentist and the patient and money for the

From Madigan Army Hospital, Tacoma, Wash.

government is here presented. With it endodontic therapy on single rooted teeth may be completed in one sitting. With a minimum of experience the dentist should be able to perform the operation in about 1 hour of chair time. This is less time than would be spent in the construction of a simple prosthesis.

INDICATIONS

The technic is indicated for any nonvital or infected single-rooted tooth, unless contraindicated by: (1) deep periodontal pockets which approximate or communicate with the apical area; (2) too close proximity of anatomic structures such as maxillary sinuses to the apical area; (3) acute inflammatory conditions in the area; and (4) debilitation of the patient.

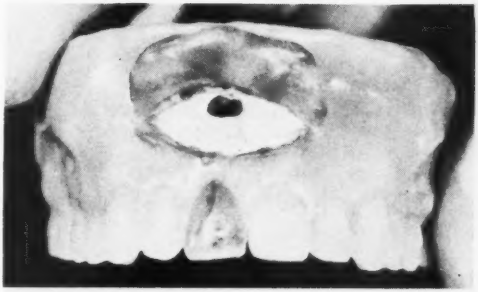

Figure 1. Model showing the extension and position of the flap and the opening to the apex through the labial plate.

Fistulas, cysts, and granulomas which may involve large root areas have not proved to be contraindications nor has abnormal mobility of a tooth due to inflammation of the apex.

TECHNIC

The area is anesthetized. The pulp chamber of the involved tooth is opened and cleaned to minimize subsequent darkening due to decomposition of pulpal tissues. The root canal is reamed and opened to as near the apex as possible. A semilunar incision is made for good access to the area to be exposed. The soft tissue and periosteum are reflected and the cortical plate exposed. Using the preoperative roentgenogram and the length and inclination of the reamer in the root canal as a guide, the apex of the tooth is approximated and the cortical plate over the apical area removed (fig. 1).

After the apical area is cleansed of debris, the reamer is advanced through the apex and the reaming of the canal is completed. With from 2 to 5 cc. of a 1:3,000 solution of benzalkonium chloride the canal is irrigated from crown to apex. The

aspirator tip is kept at apex during irrigation (fig. 2). Using a ramrod action, the walls of the canal are scrubbed with phenol, then alcohol, on a broach tipped with cotton. A dry broach is

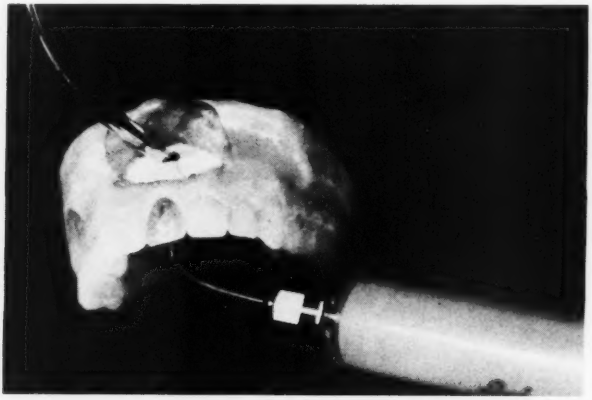

Figure 2. Flushing the canal.

placed in the canal and left in place (fig. 3). The tip of a jiffy tube of chloropercha is inserted as far apically as possible. The cotton apical plug is removed and the tube squeezed until some

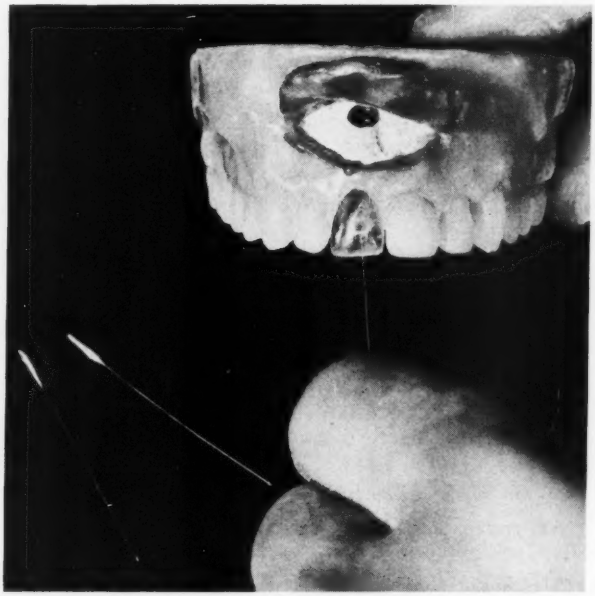

Figure 3. Use of cotton-tipped broaches.

chloropercha oozes from the apex. The tube is removed slowly as the material is squeezed into the canal. This should fill the canal (fig. 4). Now as many gutta-percha points as possible are placed in the canal. The filling material is condensed with gutta-percha points until no more excess exudes from the apex. Any excess at the apex is removed and the root tip is burnished and sealed. The apical area is cleaned; the labial surface is packed with sterile gauze; and a roentgenogram is taken. If this shows a well-condensed canal filling and a clean apical area, the filling material is removed from the pulp chamber. A light-colored cement is placed over the canal and the labial plate of the crown and the incision is closed. The lingual surface of the crown is restored with amalgam.

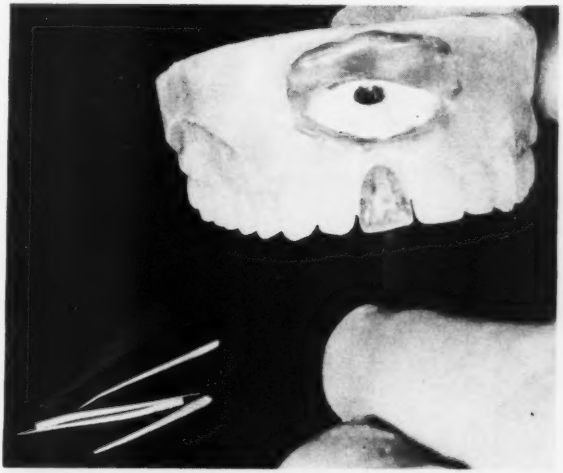

Figure 4. Placing the chloropercha in the canal by means of a jiffy tube. Jiffy tube and gutta-percha points are shown at lower left.

DISCUSSION

In acute inflammatory conditions, the tooth should be opened for drainage and the occlusion relieved. The filling operation should not be performed until the acute inflammation has subsided. Adequate antibiotic therapy should be started on the day prior to and continued through the day after the operation. Clinical results in chronic cases have been equally good without antibiotic administration.

Whenever the root contour and the access allows adequate curettage and reaming, the roots should *not* be amputated at the level of sound bone. This is not a routine apicoectomy technic. If the access is adequate, curettage of the bone and

root surfaces is all that is necessary. Clinical and radiologic evidence show the regeneration of sound periodontium and bone around roots that have been denuded by apical pericemental lesions.

Some authorities[2,3] stated that a normal radiologic appearance of the bone and periodontium indicates a histologically normal condition.

Ice packs placed intermittently on the face over the operative area for from 2 to 4 hours postoperatively will minimize edema. Little or no postoperative pain is experienced by the patient. If granulomatous areas are encountered, pain from curettage may be prevented by injecting 2 percent lidocaine with a 1:50,000 solution of epinephrine into the area.

The technical advantages of this procedure over that of first reaming and filling the canal and then opening the apical area for curettage or apicoectomy are that: (1) no time is needed at the beginning of the reaming operation for roentgenographic calibration of the canal's length; (2) a hook or twist of the canal at the apex does not interfere with the final reaming operation because these obstructions can be eliminated by apicoectomy prior to the final cleaning of the canal; (3) the canal may be flushed from crown to apex, facilitating the cleansing of its wall; (4) the apex of the tooth can be located more accurately

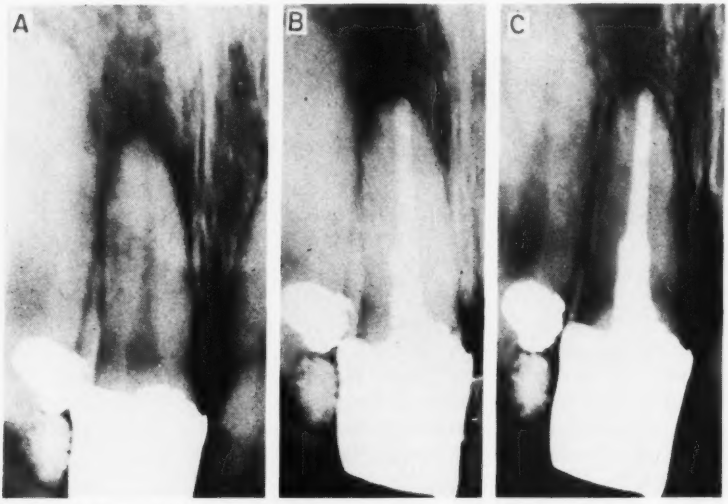

Figure 5 (case 1). (A) *Preoperative roentgenogram.* (B) *Roentgenogram taken immediately after operation.* (C) *Roentgenogram taken 11.5 months after operation.*

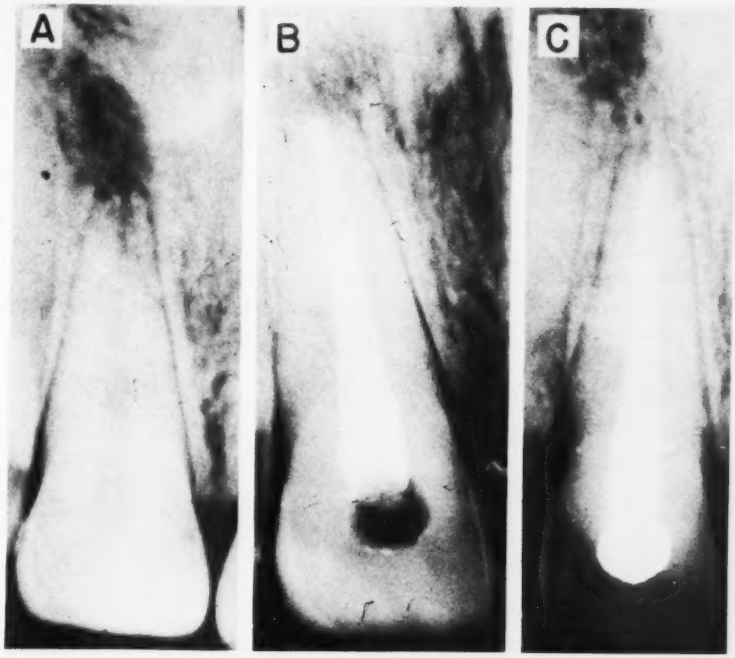

Figure 6 (case 2). (A) *Preoperative roentgenogram.* (B) *Roentgenogram taken immediately after operation.* (C) *Roentgenogram taken 14 months after operation.*

prior to the removal of the labial plate by noting the length of insertion and the inclination of the reamer in the canal; and (5) the apical seal of the canal can be checked visually by the operator at the time of placing the filling material.

CASE REPORTS

Case 1. A 17-year-old soldier had an intense toothache and generalized cellulitis of the midsection of his face. Apical involvement of the upper left central incisor, which was painful on percussion and mobile through an arc of 3/8 of an inch, was noted. The root canal was opened through the lingual surface of the crown for drainage. The lower anterior teeth opposing the involved tooth were ground to relieve hyperocclusion. An injection of 300,000 units of procaine penicillin was given daily for 4 days. The endodontic operation was accomplished on the third day of this treatment. A large area of bone destruction was found at the apex. The apex and the bony crypt were curetted and the flap sutured. Progress was uneventful and the tooth quickly lost its excessive mobility (fig. 5).

The other upper incisors presented a poor prognosis for prosthetic abutment because of their excessive mobility, large pulps, and extensive previous restoration. Loss of this involved tooth would have indicated a cuspid-to-cuspid prosthesis—an involved and time-consuming operation.

Case 2. A 23-year-old man on routine examination was found to have a darkened upper left central incisor. A roentgenogram showed a well-inscribed apical radiolucency. The tooth was asymptomatic and nonvital. Endodontic treatment was completed in one sitting. No antibiotics were administered and healing was uneventful (fig. 6). This patient presented no prosthetic problems either from a mechanical or esthetic standpoint. The final result was better than the finest prosthesis.

Case 3. A 25-year-old woman presented a chronically draining oral fistula about 10 mm. above the gingival crest and between the central and the lateral incisors. Roentgenograms showed a large apical radiolucency of the involved tooth. The patient was given 300,000 units of procaine penicillin daily for 3 days. The operation was performed on the second day. There was a large area of bone destruction at the apex involving about one third of the dental root. About 3 mm. of the apex was removed because of its pitted and eroded surface. Healing was uneventful (fig. 7). Here prosthesis was circumvented, eliminating a per-

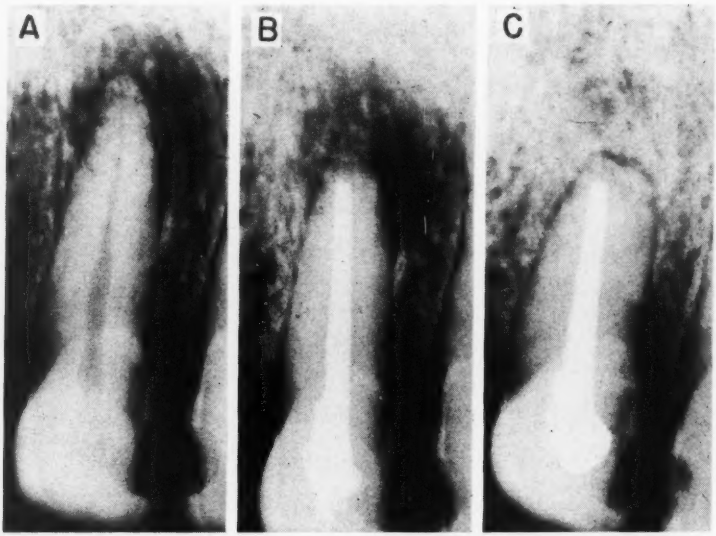

Figure 7 (case 3). (A) *Preoperative roentgenogram.* (B) *Roentgenogram taken immediately after operation.* (C) *Roentgenogram taken 8 months after operation.*

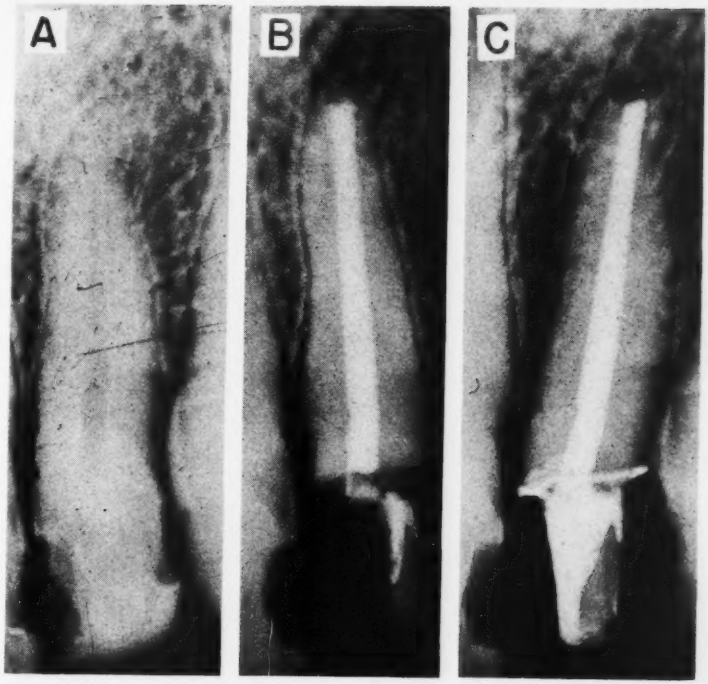

Figure 8 (case 4). (A) *Preoperative roentgenogram.* (B) *Roentgenogram taken immediately after operation.* (C) *Roentgenogram taken 9 months after operation.*

plexing problem to the prosthodontist and saving time for him and the laboratories.

Case 4. A 30-year-old woman had an acute toothache aggravated by percussion and localized in the upper right lateral incisor. Vitality tests were negative and roentgenograms showed no apical involvement. The crown of the tooth was opened for drainage and the remains of the pulp removed. The root canal was left open for drainage. The patient was given 300,000 units of procaine penicillin daily for 3 days. When the acute symptoms had subsided the endodontia was accomplished. No apical bony destruction was found and the apical curvature was removed to facilitate reaming the canal. Healing was uneventful (fig. 8). Although this tooth could have been replaced with a fixed prosthesis, its preservation in the arch allowed a more favorable restoration from an esthetic standpoint.

Case 5. A 23-year-old man had pain and sensitivity to percussion in the lower right central and lateral incisors with

swelling of the labial surface of the alveolar process and crepitation. Roentgenograms showed a large cystic area involving the apexes and roots of these teeth. The crowns of the teeth were opened and a purulent discharge was observed. The patient was given 300,000 units of procaine penicillin and 0.5 gram of streptomycin daily for 7 days. When tenderness subsided

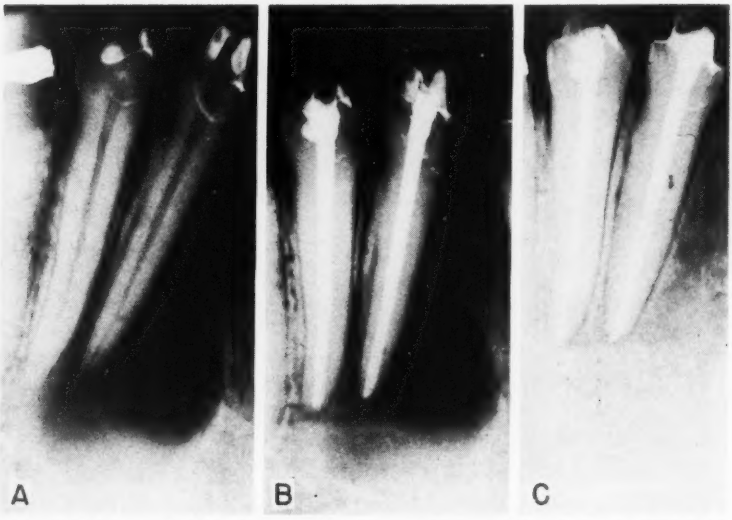

Figure 9 (case 5). (A) *Preoperative roentgenogram.* (B) *Roentgenogram taken immediately after operation.* (C) *Roentgenogram taken 6 months after operation.*

on the fourth day, the operation was performed. A large area of bone destruction was present around the dental roots; the apical half of the roots were completely denuded; and the labial plate over these areas was destroyed. The root and bony crypt surfaces were curetted and the incision sutured after the canal fillings were placed. Healing was uneventful (fig. 9). Making a partial prosthesis for this patient would have been almost impossible. The teeth remaining were short, conically shaped, and spaced so that any attempt at prosthesis would have given a poor mechanical and esthetic result.

SUMMARY

The simplified, practical, and successful method of root canal therapy here described results in a great saving of the dentist's time. With very little experience in this technic, the average operator can become proficient enough to complete the operation in 1 hour of chair time. Endodontia, besides being an

important service to the patient, can become interesting and enjoyable to the dentist. No special equipment or materials are needed beyond those available on the supply table or those found in the usual dental office.

The procedures of reaming, cleaning, and filling of the root canal are reduced to simple operations, as are the condensing and sealing of the filling material at the apex of the tooth. Whether the canal is contorted or wide open at the apex makes little difference to the operator when this technic is used. In military dentistry more anterior endodontia would result in fewer prostheses being made, thereby benefiting the soldier functionally and esthetically and the government financially.

REFERENCES

1. Grossman, L. I.: Root Canal Therapy. 3d edition. Lea & Febiger, Philadelphia, Pa., 1950. pp. 238-254.

2. Eckes, H. F., and Adams, F. L.: Combined root canal therapy and apicoectomy; progressive report. *J. Am. Dent. A.* 39: 66-73, July 1949.

3. Evaluation of modern root surgery treatment. *J. Am. Dent. A.* 42: 649-653, June 1951.

Future of Electrocardiography

On superficial examination it would not seem that any further progress can be made in electrocardiography. True, vectorcardiography has enjoyed a renascence, and the spatial vector method of synthesis of surface leads has proven useful in diagnosis and teaching. But the latter is merely a way of visualizing, and the former a method of presenting the same electrical information provided by conventional leads. Neither is likely to add much of value diagnostically, although both have added a great deal to our understanding of the genesis of the deflections seen in the leads usually recorded in the clinic.* * * The history of scientific endeavor has repeatedly shown the hazard of predicting that progress in any field of investigation is no longer possible. The belief that the end of productivity in electrocardiography came in 1924 has since been proven to be the grossest sort of error. Those most responsible for reversing the miscalculation were the late Doctor Frank Norman Wilson and his associates.

—CHARLES E. KOSSMAN, Colonel, USAFR (MC)
in the *American Journal of Medicine*

MILITARY ASPECTS OF THE DIAGNOSIS OF EPILEPSY

HENRY S. COLONY, *Commander, MC, USN*

BERNARD I. KAHN, *Commander, MC, USN*

THE grand mal seizure, which may be a diagnostic symptom of epilepsy, is rarely found in the young man who first enlists in the Armed Forces. Epilepsy, however, is of particular importance in the military service. The inability to prophesy or gage the magnitude of seizures must of necessity curtail the type and variety of duty as well as the locale of the soldier, sailor, or airman. However loyal or patriotic he may be, he cannot be trusted around machinery, to work as a driver, to handle artillery, or participate in active combat.

Not all convulsions are epileptic in origin; their etiology offers a differential diagnostic problem to the physician, for it may vary from hypoglycemia to hysteria.

When a patient is hospitalized for determining the cause of his convulsions, the burden of proof is on the military physician to establish the diagnosis of epilepsy. It is not merely of diagnostic or military importance, but has a unique socioeconomic importance to the tax-paying public. The Career Compensation Act of 1949 states that only persons with service-connected disabilities are awarded monetary compensation. This Act further provides that those with a service-connected disability of less than 30 percent will receive compensation in a lump sum of 2 months' base pay up to 12 years. Service-connected disabilities of 30 percent or more receive a proportional amount of base pay monthly, up to 75 percent, in a form of retired pay. Those who are temporarily retired never receive less than 50 percent, but their cases are reviewed every 18 months. In the event no substantiating evidence concerning convulsions prior to service can be elicited, it is logical to assume that the epilepsy was service-connected. As an obligation to the tax-paying public, therefore, as well as for the good of the service, diagnosis should be made at the earliest possible time.

From U. S. Naval Hospital, Oakland, Calif. Presented before a combined meeting of the San Francisco Neurological Society, the Los Angeles Neurosurgical Society, and the Western Society of Electroencephalography, 2 March 1952, Pebble Beach, Calif.

In 1951 there were 471 admissions to the neurological department of this hospital, of which 125 (26 percent) were admitted with a diagnosis of questionable epilepsy. Because of the magnitude and importance of this problem, a series of diagnostic procedures have been devised to segregate those patients who do not have true epilepsy.

METHOD

The diagnostic program includes the following: blood counts, urinalysis, blood serology, spinal fluid examination, roentgenograms of the skull, determinations of serum cholesterol and serum calcium, glucose tolerance test, and a series of electroencephalograms. If the glucose tolerance test demonstrates a flat curve or a significant decrease in the blood sugar, it is followed by an insulin tolerance test. After a fasting blood sugar specimen is drawn, 0.1 unit of regular insulin per kilogram of body weight is given intravenously and blood sugars are taken at 5, 20, 45, 60, and 120 minutes following the insulin; concurrently an electroencephalogram is made to correlate blood sugar levels with abnormalities which might appear on the tracing. The series of electroencephalograms includes 4 successive tests followed by a metrazol (pentylenetetrazole) activation and, if indicated, an amytal sodium (amobarbital sodium) sleep-tracing. Metrazol activation is performed by giving up to 300 mg. of metrazol intravenously at the rate of 100 mg. per minute during the test. This method has proved to be eminently satisfactory. Amytal sodium sleep-tracings are considered to be indicated when there is a question of temporal focus or when the convulsions are primarily nocturnal. The method is to inject 0.487 gram of amytal sodium intravenously while the test is run.

The figures given in table 1 were obtained from 1 January 1951 to 1 January 1952. They were compiled to evaluate the efficacy of the current methods in use at this hospital in the attempt to prove or disprove the diagnosis of epilepsy. Of the 119 patients admitted for suspected epilepsy, 78 were discharged from the service with a diagnosis of epilepsy; 41 were either returned to duty or transferred to the psychiatric ward or elsewhere in the hospital.

In our interpretation, "verified epileptic" implies that the accumulation of data from the history, laboratory work, and electroencephalograms leaves no reasonable doubt that the patient is a true epileptic. If his electroencephalogram is abnormal but seizures or aftereffects of seizures have not been witnessed, he is returned to duty not classified as an epileptic. As a general rule, a statement that there was not sufficient proof to verify the diagnosis was made part of his record; if any subsequent

TABLE 1. *Results of serial electroencephalograms*

Diagnosis	Patients with no abnormality	Patients with abnormality noted on/with							Total patients
		First test	Second test	Third test	Fourth test	Amytal sodium	Insulin	Metrazol	
Nonverified epileptics	26	4	4	0	1	0	1	5	41
Verified epileptics	8	32	11	5	2	1	1	18	78
Grand mal	8	27	8	5	2	1	1	14	66
Petit mal	0	2	2	0	0	0	0	3	7
Psychomotor	0	3	1	0	0	0	0	1	5

seizures occur, they should be recorded. If an adequate description of a seizure is submitted, it is considered acceptable whether witnessed by a physician, members of the family, or shipmates.

Of the total number of verified epileptics, 66 were diagnosed as grand mal, 7 petit mal, and 5 psychomotor types. In the electroencephalograms of verified epileptics, 8 did not exhibit abnormal tracings, but 32 revealed an abnormality in the first test; 11, for the first time on the second test; 5, on the third, and 2, on the fourth. One patient given amytal sodium, 1 with insulin tolerance, and 18 with metrazol activation tests also had abnormal electroencephalograms. Of those whose diagnosis was not verified, 26 showed no abnormalities; 4 showed an abnormality for the first time on the first test; 4, on the second; none, on the third; 1, on the fourth; 1, with insulin tolerance; and 5, with metrazol activation. Among those with grand mal epilepsy, 8 had no abnormalities; 27 had abnormalities on the first test; 8, on the second; 5, on the third; 2, on the fourth; 1, with amytal sodium; and 14, with metrazol activation. In patients with petit mal epilepsy, the first abnormality occurred in 2 on the first test, 2 on the second, and in 3 with metrazol activation. The abnormality occurred in patients with psychomotor epilepsy on 3 occasions in the first test, 1 on the second, and 1 with metrazol. These figures tend to show that about one-half of the epileptics will show an abnormality for the first time in subsequent tests. About one-fourth of the total number demonstrated the first abnormality with metrazol activation. The 5 nonverified epileptics with metrazol activation correlates with the number who demonstrated abnormalities in the first and second tests.

SUMMARY

Although epilepsy always presents a diagnostic problem, in the military service it is of particular importance not only because of the monetary considerations but also because the burden of proof rests upon the military physician. For these reasons, our admissions for a period of 1 year were reviewed. A brief description has been given of the diagnostic procedures in use. These procedures include four successive electroencephalogram tracings followed by an activated electroencephalogram. The records reveal that the custom of taking only one electroencephalogram to rule out epilepsy results in many cases in misleading information. The use of activated procedures has proved to be of definitive value.

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Green Wave of Chlorophyll Ebbs

No doubt the time will be short till the green wave of chlorophyll that threatened to inundate the United States will begin to ebb. Chemists at Glasgow University have been testing chlorophyll against the smell of skunks, perspiration, chopped onions, garlic and foul gases and conclude that it has no deodorant properties whatever. This result was predicted in *Postgraduate Medicine* well over a year ago when the wave first began to rise. Dr. John C. Brocklehurst of the Department of Materia Medica at Glasgow worked out a test in which mercaptan, the foulest gas he could find, was passed through tubes of chlorophyll and then through a reagent, iodine, so that it could be found how much of the foul-smelling gas had been absorbed by the chlorophyll. Dr. Brocklehurst observed, as reported in the *British Medical Journal,* that just as much of the gas was absorbed by water as by chlorophyll. Similar tests were made with other offensive odors.

In a final test, Dr. Brocklehurst and his associates swallowed more than 25 times the number of tablets of chlorophyll recommended as an ordinary dose and found that the characteristic odor caused by asparagus in the urine was not removed, nor was there any effect on the odor of perspiration from the armpits.

The announcement from Great Britain caused consternation among the purveyors of chlorophyll as a deodorant in the credulous United States. They met in New York City, as reported by the New York Times, and apparently did not wish to take this announcement "lying down." Nevertheless, Dr. Sam Granick of the Rockefeller Institute for Medical Research said that the United States extractors of chlorophyll "do not have a leg to stand on" in claiming that a pill taken by mouth can deodorize. This statement was agreed to by Dr. A. H. Corwin, head of the Department of Chemistry at Johns Hopkins University. Indeed he asserted that chlorophyll masks odors because of the mixtures that are sold. Mixed with licorice the smell is like licorice and mixed with mint the smell is like mint; it is the odor of the substance added that masks the odor that is said to have disappeared because of the chlorophyll.

Apparently the only joy to be derived from the current situation is that of the growers of alfalfa who sold 40,000 tons of high-grade alfalfa last year for making chlorophyll.

As one views the current situation, one is impressed by the fact that these waves of enthusiasm come oftener nowadays but they also disappear faster.

—MORRIS FISHBEIN, M. D.
in *Postgraduate Medicine*

TREATMENT OF NEUROGENIC BLADDERS WITH BANTHINE

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THE action of quaternary ammonium salts on the bladder has been known for some time. Nesbit and his coworkers[1] in 1947, reported the effects of tetraethylammonium chloride on the urinary bladder. A new quaternary ammonium derivative, methantheline bromide (β-diethylaminoethyl xanthene-9-carboxylate methobromide, commercially designated as banthine), has an action on the bladder which is similar but less marked. In small amounts banthine inhibits postganglionic cholinergic activity and in larger doses blocks the transmission of impulses through the autonomic ganglia. In still larger doses it has a curarelike effect. Prompted by observations on elderly patients undergoing treatment for peptic ulcer with banthine,[2] wherein a slightly hypertrophied prostate resulted in complete urinary retention while they were taking banthine, an effort was made to determine how much effect, if any, the drug would have on the spastic types of neurogenic bladder in paraplegic patients at this hospital.

METHOD

The Lewis cystometer was used in making the diagnosis and in following the course of patients with spastic bladders who were treated with banthine. The first step was to determine at what stage the bladder's condition became stabilized. This was important because the drug is contraindicated during spinal shock and in the treatment of the autonomic and reflex paralytic types of bladder.

Filling of the bladder was in increments of 50 cc. in all but one patient in whom increments of 25 cc. were used. Keizur and Hodges[3] filled the bladder at a continuous rate of 50 cc. per minute, instead of by increments. This was thought to produce a more physiologic cystometrogram, but the method of 50 cc. increments served our purpose and as a uniform method. The uninhibited neurogenic bladder was found to respond the best and the pure reflex bladder the least of the spastic types of

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bladder tested. These results agreed with the findings of Lapides and Dodson[4] and of Keizur and Hodges.[3]

Our clinical criteria for the use of the drug were: (1) a spastic type of neurogenic bladder which had reached a stable stage; (2) absence of stones or infection; (3) absence of obstruction; and (4) a normal cardiovascular system. Glaucoma, severe cardiovascular disease, and myasthenia gravis are contraindications. After sufficient cystometrograms were obtained to make the diagnosis of a stabilized spastic neurogenic condition, our procedure was to inject from 50 to 100 mg. of banthine intravenously. Ten minutes later the cystometrogram was repeated, and this furnished prompt and reliable information of the effect of the drug. Frequent blood pressure and pulse determinations were made during the injection which was done slowly. If the systolic blood pressure rose above 140 or the pulse above 120 the drug was discontinued. The amount given at this time determined the subsequent oral dosage, although in no case was more than 100 mg. given intravenously. The oral dosage was then adjusted symptomatically and, although it caused no significant change in blood pressure in our patients, the pulse and blood pressure both rose markedly when banthine was given intravenously. In no patient, however, did the pulse and blood pressure remain elevated beyond a period of six hours.

CASE REPORTS

Case 1. A 21-year-old man who had sustained a compression fracture of his twelfth thoracic vertebra in Korea, was evacuated to this hospital and a laminectomy was performed on his vertebras from the tenth thoracic to the second lumbar inclusive. When first seen on the urology service in July 1952 a markedly hypotonic bladder with a flat curve was noted. He was given the usual paraplegic care and had a continuous indwelling catheter until December. Litholapaxy was performed on two occasions for the removal of bladder calculi and in December a markedly hypertonic bladder of the uninhibited type was noted (fig. 1A). Ten minutes following the intravenous administration of 100 mg. of banthine the patient presented a more nearly normal cystometrogram (fig. 1B). He was thereafter maintained on 100 mg. of banthine by mouth every six hours and the indwelling catheter was withdrawn. Prior to the administration of banthine, when the catheter was withdrawn, it was necessary for him to have a urinal in place constantly because of micturition on the average of every five or ten minutes. Following the intravenous and oral administration of banthine he was able to retain his urine and void every two or three hours with warning sufficient to have a urinal in place. Previously he had had no sensation prior to precipitate micturition. In February 1953 he consented to a therapeutic test. The drug was withdrawn for three days. At the end of this time con-

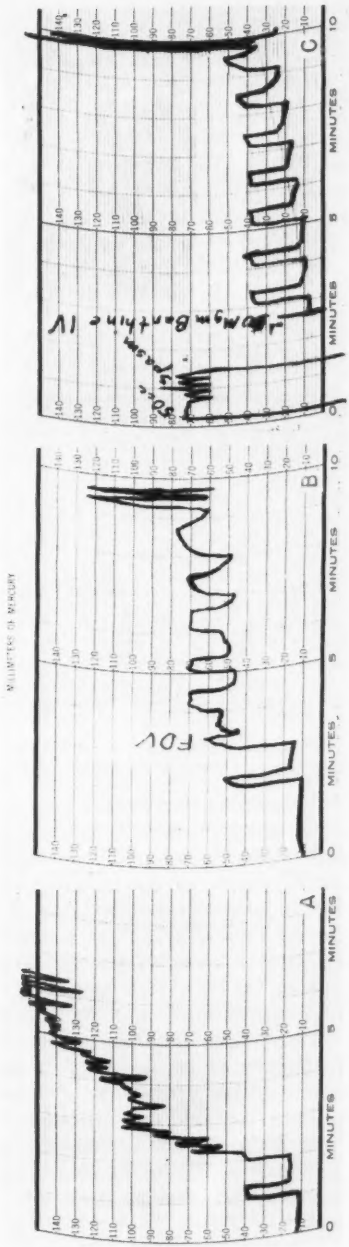

Figure 1. Cystometrogram for case 1. (A) Prior to medication; bladder capacity, 100 cc. (B) After 100 mg. of banthine; bladder capacity, 350 cc. (C) Banthine discontinued three days; bladder capacity, 350 cc. (FDV=first desire to void.)

stant bladder spasms caused extreme discomfort and it was again necessary to have a urinal handy at all times. He begged to have the banthine restored and this was done. A cystometrogram was begun and after the bladder showed initial spasm with the first increment of filling, the machine was stopped and 50 mg. of banthine were administered intravenously and the cystometrogram continued. Within 10 minutes after the intravenous administration of the drug the bladder again presented a nearly normal curve (fig. 1C). Two months later this patient was doing well on 100 mg. of the drug by mouth four times daily and was urinating voluntarily every three or four hours. His social activity is limited only by the capacity of his bladder, which has now reached 350 cc.

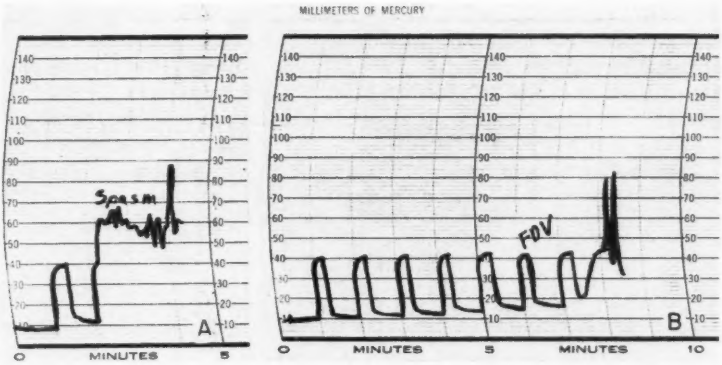

Figure 2. Cystometrogram for case 2. (A) *Prior to medication; bladder capacity, 100 cc.* (B) *After 100 mg. of banthine; bladder capacity, 400 cc.*

Case 2. A 19-year-old man was admitted to the urology service for treatment of bladder complications accompanying an obscure type of paralysis, tentatively diagnosed as multiple sclerosis. An uninhibited neurogenic type of cystometrogram was obtained (fig. 2A) and the patient was given 100 mg. of banthine intravenously. An oral dose of 75 mg. every six hours was established because of moderately severe side effects on larger doses. After four days of this regimen he was still urinating every 25 or 30 minutes, but without incontinence and with sufficient warning to have a urinal in place. A large bladder calculus was known to be present and the failure of banthine to increase his bladder capacity was attributed to the irritation of this calculus. The calculus was removed with the Lowsley lithotrite and the regimen of 75 mg. of banthine orally every six hours was resumed. A normal cystometrogram was obtained at which time his bladder capacity was 400 cc. (fig. 2B) and he was voiding at intervals of from 45 to 60 minutes.

Case 3. An 18-year-old man was admitted because of enuresis. He gave a history of intermittent enuresis throughout his entire life, averaging once or twice a week. In January 1952 at an Army hospital in Japan a diverticulectomy of the bladder was performed but without improvement. At that time he was said to have a left ureterocele with hydroureter and pyelonephritis. A roentgenogram of the lumbodorsal spine revealed a transitional type vertebra in the lumbosacral area with a defect in the neural arch resulting in a first degree spondylolisthesis. Retrograde and intravenous pyelograms revealed a dilatation of the terminal portion of the left ureter and an apparently normal bladder shadow. Cystoscopy and cystourethrograms were normal. After three episodes of enuresis a cystometrogram was performed which revealed numerous uninhibited contractions (fig. 3A). The patient was given 75 mg. of banthine orally every six hours after the

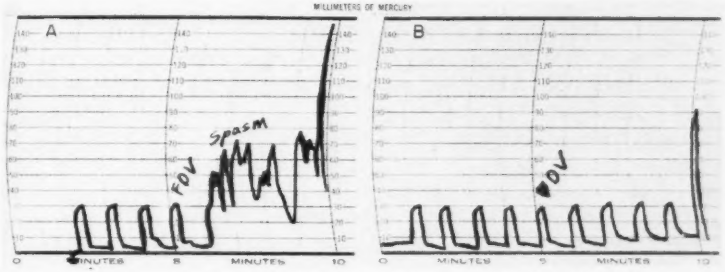

Figure 3. Cystometrogram for case 3. (A) *Prior to medication; bladder capacity, 250 cc.* (B) *After 75 mg. of banthine; bladder capacity, 450 cc.*

same dose intravenously resulted in a normal cystometrogram. Subsequent cystometrograms showed a normal bladder and the patient had only one episode of enuresis after drug therapy was started (fig. 3B). Further observation of this patient was impossible because of a change of his duty station.

Case 4. A 24-year-old paraplegic was referred to the urology service for evaluation and treatment of a spastic type of neurogenic bladder. A cystometrogram showed a severely spastic bladder of small capacity. This patient had an asymptomatic calculus in the left kidney and numerous small bladder calculi, which were removed by litholapaxy. Postoperatively, his cystometrogram revealed an uninhibited neurogenic bladder (fig. 4A). He was given 100 mg. of banthine every six hours orally following a diagnostic intravenous dose, which resulted in a normal curve 10 minutes later (fig. 4B). When transferred from this hospital to a Veterans Administration facility he had good control and sufficient warning to have a urinal in place for micturition at intervals of from 30 to 45 minutes. It is possible that this interval may gradually increase as it did in case 1.

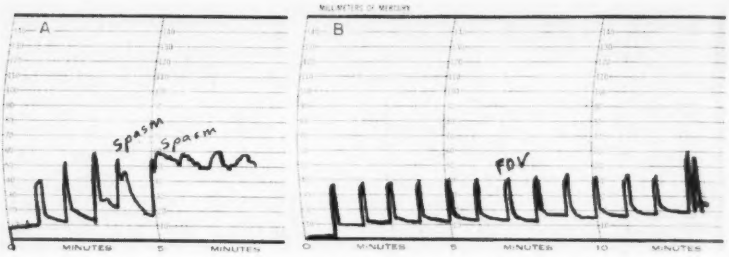

Figure 4. Cystometrogram for case 4. (A) *Prior to medication; bladder capacity, 75 cc.* (B) *After 100 mg. of banthine; bladder capacity, 300 cc.*

Case 5. A 19-year-old man was transferred to the urology service because of urinary incontinence three or four times weekly and enuresis dating back to an injury incurred in Korea. At the time of injury, and subsequently, there was no evidence of spinal or other injuries to his nervous system. His neurologic findings were normal. Cystometrograms revealed a spastic type of neurogenic bladder (fig. 5A). Cystoscopy and cystourethrogram showed moderate trabeculation consistent with an uninhibited neurogenic or reflex type of bladder. No cause was found for this defect. The patient was given 75 mg. of banthine by mouth every six hours following an intravenous dose of 100 mg. which resulted in a nearly normal cystometrogram (fig. 5B). He had no further incontinence or enuresis during the period of observation and side effects were minimal.

DISCUSSION

It has been known for some time that quaternary ammonium salts were capable of causing paralysis of the bladder by impairing transmission of nerve impulses through the autonomic ganglia. Tetraethylammonium chloride has never been used successfully in treatment of bladder disorders because of its severe side effects. We did not observe complete retention of urine

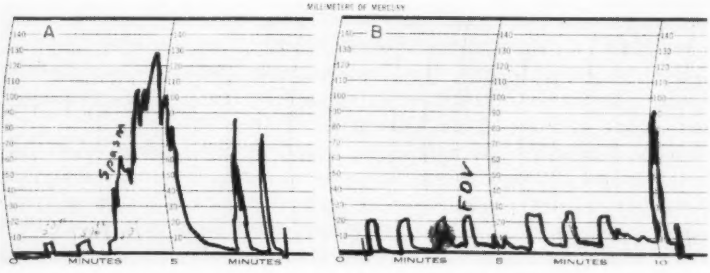

Figure 5. Cystometrogram for case 5. (A) *Prior to medication; bladder capacity, 150 cc.* (B) *After 100 mg. of banthine; bladder capacity, 350 cc.*

although on one occasion a patient (case 2) did not urinate for six hours. When preparations were being made to catheterize him, however, he voided spontaneously and thereafter did well. The side effects of banthine in our patients were transitory and of only moderate severity and were manifested mainly by dry mouth and blurred vision. One of us (R. M. F.), in a personal therapeutic test of the drug for observation purposes, noted that the most distressing side effect was dryness of the mouth which made it difficult to swallow food. The impairment of vision was a moderate photophobia rather than actual blurring. Although the drug in therapeutic doses is said to have no effect on the normal bladder, it was thought that slight diuresis was obtained, probably due to decreased sweating. There was also a moderate decrease in the force of the urinary stream, accompanied by a feeling of incomplete emptying of the bladder but this disappeared in two days. Elderly patients may complain of sexual impotence.

Originally the action of banthine on the bladder was regarded as an undesirable side effect of the treatment of peptic ulcer.[2] In the presence of urethral obstruction, as in patients with benign prostatic hypertrophy, in whom the bladder is already exerting a maximal effort to empty itself, complete urinary retention may be expected as the bladder musculature is inhibited by the anticholinergic effects of banthine. Lapides[5] and Riskind and Zide[6] have observed the effects of banthine on normal and neurogenic bladders. Riskind and Zide reported excellent results in Hunner's ulcer and in chronic trigonitis.

SUMMARY

Banthine has a depressing effect on the spastic bladder due to its anticholinergic activity and may be helpful in the treatment of all types of spastic neurogenic bladders. Good results were obtained in five patients including one with congenital enuresis and four with uninhibited neurogenic bladders. Several patients with reflex bladders (not recorded here) have been observed by us with disappointing results. Banthine may be expected to increase the capacity of the reflex type of bladder, making the patient more comfortable and aiding in his rehabilitation by reducing the frequency of micturition. The intravenous route is recommended for the first dose, not only to provide a rapid evaluation of the effect of the drug, but also to establish quickly an effective blood level which then can be maintained by oral administration. Banthine should be injected slowly while observing the patient's pulse and blood pressure because marked elevation of both occurs during intravenous injection. The antidote is neostigmine bromide.

REFERENCES

1. Nesbit, R. M., et al.: Effects of blockade of autonomic ganglia on urinary bladder in man. *J. Urol.* 57: 242-250, Feb. 1947.
2. Waller, J. I.: Urinary retention due to banthine. *J. Urol.* 68: 773-774, Oct. 1952.
3. Keizur, L. W., and Hodges, C. V.: Anticholinergic (banthine) influences on normal and neurogenic bladder function. *J. Urol.* 69: 259-271, Feb. 1953.
4. Lapides, J., and Dodson, A., Jr.: Preliminary report; study of effects of banthine on human bladder. *J. Urol.* 69: 96-101, Jan. 1953.
5. Lapides, J.: Observations on normal and abnormal bladder physiology. *J. Urol.* 70: 74-83, July 1953.
6. Riskind, L. A., and Zide, H. A.: Banthine in urologic disorders. *J. Urol.* 68: 636-637, Sept. 1952.

Therapeutic Abortion

"The two great purposes of the art of medicine are to save life and to relieve suffering. Any situation wherein a physician not only witnesses death but is called upon to cause it must be doubly distasteful to him. A therapeutic abortion is such a situation. It is really an admission of failure on all parts to control disease and remove its threat to the life of the mother." Thus did Bowles and Domzalski in 1949 summarize one of the most important and controversial problems in modern medicine—important because therapeutic abortion is identified with a plan, however well intentioned, which culminates in the deliberate destruction of the fetus prior to the period of viability; controversial because in this one phase of medicine the life of the baby is unconditionally surrendered to the disease of the mother.

The physician from earliest times has dedicated his life to the *saving* of human life. Leaders in our profession from the days of Hippocrates have emphasized this concept and have particularly stressed the responsibility of the physician in safeguarding the life of the unborn child. As recently as 1948, one of the most important precepts propounded by the World Health Organization in its Declaration of Geneva is the statement, "I will maintain the utmost respect for human life from the time of conception; even under threat I will not use my medical knowledge contrary to the laws of humanity.

—ROY J. HEFFERNAN, M. D., and
WILLIAM A. LYNCH, M. D.
in *American Journal of Obsterics and Gynecology*

PHYSIOLOGIC EFFECTS OF CERTAIN EXPLOSIVES AND CHLORINATED HYDROCARBON SOLVENTS

JOHN H. FOULGER, M. D.

TO PLAN a comprehensive program of health conservation for workers exposed to chemicals, one must answer four questions: (1) How can chemicals enter the body to afford a health hazard? (2) What is the nature of the injury they might produce? (3) What practical protective measures can be employed? (4) How can one assess the efficiency of these measures?

WAYS IN WHICH CHEMICALS ENTER THE BODY

During industrial use, chemicals can enter the body through the skin as liquids or solutions, or sometimes as particulate matter, and through the respiratory tract as dust, mists, fumes, vapors, or gases.

We usually consider the skin as good protection, but it is not as good as we have imagined. It has been shown in recent years that even a slight abrasion of the skin can open small blood vessels and lymphatics to the entry of solutions and of fine particulate matter. Once having entered, chemicals can pass directly into the venous supply and be distributed throughout the body. Normally we consider a man's skin as protected by his clothing and are apt to be concerned only with the contact of the head, neck, hands, or exposed forearms with hazardous chemicals, but we must not forget that contaminated clothing is a potential source of contact and a reservoir from which materials can enter the body. Very few articles of clothing ordinarily worn are completely impervious to either solid or liquid chemicals, and almost none to gases.

Even though a particular material may not pass through the skin, contact dermatitis or allergic dermatitis may develop. While, in general, the hazard of injury by chemicals entering through the skin is not as great as when the chemical enters

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the respiratory tract, it may be greater than by ingesting the chemical. In a recent survey of comparative toxicities by skin absorption and by ingestion, I found that at least 50 percent of the materials considered were more hazardous by absorption. In a few cases, entry through the skin can be as rapidly injurious and even as rapidly fatal as entry through the respiratory tract. Thus, a small quantity of ethylene chlorohydrin spilled on the shoes can penetrate the leather and skin, and cause death. Aniline or nitrobenzene spilled on the clothes can lead to severe cyanosis by production of methemoglobin. One can never disregard the skin as a source of entry or clothing as a possible factor in hazards from chemicals.

Only about 2 square meters of skin surface is exposed to the entry of foreign material, however, while in the lungs an area of about 100 square meters of capillary bed, through which chemicals can enter the blood stream, is exposed at each inspiration. Inhalation of chemicals in gases, vapors, mists, fumes, or dusts may not necessarily lead to prompt entry into the circulation. The immediate effects of inhaling foreign material depend to a great extent on the irritancy of the material. Nonirritant material may pass directly to the alveoli. Particulate matter, more than 10 microns in diameter, will probably be filtered by the cilia of the respiratory tract and eventually coughed up, but smaller particles will pass to the alveoli, be taken up by phagocytes, and moved to the regional lymph nodes. Dissolved material, gases, and vapors may pass directly through the walls of the alveoli into the capillary bed of the lungs, and so into the systemic circulation. This ease of passage may be modified, however, if the material inhaled has specific pharmacologic properties. Contact with the walls of the respiratory tract may cause reflex activity which will modify the whole respiratory pattern.

Irritant materials entering the respiratory system may have actions different from those due to absorption into the body. For instance, irritant particulate matter and irritant vapors striking the nasal mucous membrane can lead to an intense bronchoconstriction. As a result, inspiration is not impeded but exhalation is made difficult. This is similar to the physiologic situation in bronchial asthma. If such materials irritate the upper respiratory tract above and around the vocal cords, they can cause acute spasm of the vocal cords, or false vocal cords, producing various degrees of laryngospasm and hindering respiration. In an extreme case there may be complete closure of the airway. This hazard of acute laryngospasm is well known to the anesthesiologist. Irritant materials can lead to reflexes over the recurrent laryngeal nerve which may produce complete cardiac standstill. If the cardiac muscle itself is hypoxic, this

reflex action plus the condition of the muscle can result in ventricular fibrillation. The possibilities of various degrees of laryngospasm, or of reflex action upon the heart, must not be overlooked whenever a chemical is inhaled, regardless of the fact that it may be of low toxicity.

TYPE OF INJURY

We are concerned today with a number of explosives and with a select group of chlorinated hydrocarbons which might be handled in naval establishments or on board ship. The detailed toxicology of these compounds would be voluminous, but the answer to our second question, "Against what type of injury are we to protect our workers?" is as follows:

Ammonium picrate, while it stains the skin, does not lead to dermatitis, so far as I have observed, and, if it is absorbed into the body, does not lead to systemic poisoning.

Nitroglycerin has no direct action on the skin, but it is very rapidly absorbed into the body and acts upon the smooth muscles of the smaller arterioles, causing a fall in arterial blood pressure. It may lead to a circulatory collapse similar to that in orthostatic hypotension. The action of nitroglycerin passes off fairly rapidly once exposure is ended and no harm should result unless the circulatory collapse is so severe as to lead to a pooling of blood in the extremities and abdomen with failure of return of blood to the brain. In this case, syncope may occur, the outcome of which depends on the position of the patient. If he should fall so that his body lies horizontally, return of the blood to the brain will be facilitated and he will recover quickly. If he should fall in a "jackknife" position, however, with head up so that cerebral circulation cannot be restored rapidly, there could be a fatal outcome. Nitroglycerin dilates cerebral blood vessels and the increased pressure within the skull produces severe headache.

Tetryl is a major cause of allergic dermatitis in plants handling explosives. Its activity is so great that contaminated clothing worn by a worker in a public conveyance may produce tetryl dermatitis in other persons traveling in the same conveyance. Tetryl dermatitis does not affect all people, but it can be very severe and lead to great loss of time. It is now definitely confirmed that tetryl, if absorbed into the body under conditions of industrial use, does not produce systemic poisoning.

Trinitrotoluene (TNT) is one of the most hazardous of the ordinary explosives to handle. It can be inhaled as fumes from melt pots during shell loading, or as dust during the removal of TNT from packages. It can be absorbed through the skin by contact with contaminated equipment. In the past, skin absorp-

tion in unnecessarily dirty operations during shell loading has been the chief source of absorption of TNT. The older method of filling shells by hand is being replaced by mechanical devices, and cleanliness in the operation is improving. TNT may cause a number of unfortunate conditions. First, it can produce a mild dermatitis, but this has not been very important in industry. Second, the entry of even a few crystals of TNT into the mouth may (because of its bitter and unpleasant taste) lead to nausea or vomiting and gastrointestinal disturbance. Absorption of TNT into the body causes gastritis with gastrointestinal disturbances of all types, loss of appetite, a peculiar pallor of the skin, and a feeling of excessive fatigue and great anxiety. This form of gastritis in some way involves nutrition, because its incidence can be reduced if workers exposed to TNT receive adequate food intake. Gastritis from TNT has caused a great loss of working time but it apparently does not lead to injury of the liver. The most outstanding form of injury from TNT has been hepatitis. Usually this occurs in a certain small proportion of the workers during the first 3 to 5 months of exposure. Pathologically, the findings are a central lobular necrosis, particularly in the left lobe and the inferior marginal region of the right lobe, i. e., in those parts of the liver having the poorest circulation. Nutrition is in some way involved in this activity of TNT. A high fat diet apparently makes one more prone to the disease while a high protein diet has been claimed to be protective. Even small quantities of TNT absorbed through the skin by susceptible individuals can lead to severe disturbance of the bone marrow and to death from neutropenia. Handling of contaminated TNT boxes, in shipment or moving them through a plant, has led to this condition. In workers exposed to TNT, therefore, one should take careful cognizance of the blood picture before employment and during exposure.

Most explosives are nitrogen compounds. In the process of nitration of organic material, nitrogen oxides are produced. Sometimes they appear as brown fumes, but often the gases, although in high concentration, are almost colorless or only pale straw colored. The intensity of possible exposure, therefore, and the effects which it might produce are not indicated by the color intensity of the gases. These nitrogen oxides are not highly irritant and workers inhaling them may not cough or feel any particular uneasiness at the time, but several hours later may develop a feeling of extreme fatigue. Shortly after there may be respiratory uneasiness together with a fall in blood pressure and hemoconcentration. Pulmonary edema may develop rapidly. This may either be fatal, or be followed by secondary infection of the lungs, unless adequate treatment is given promptly. It is extremely important that workers who inhale nitrogen oxides be removed at once from exposure, given bed

rest and inhalation of oxygen, preferably with exhalation against a pressure of about 4 cm. of water. If, with this treatment, the natural pink color of the face is maintained, the majority of patients will recover without severe pulmonary edema or, if edema develops, without important sequelas.

The principal chlorinated hydrocarbons to be considered are tetrachloroethane, carbon tetrachloride, trichloroethylene, and perchloroethylene, which are all used in degreasing.

Tetrachloroethane is a dangerous chemical. Its use as a solvent for airplane "dopes" caused much illness and many deaths due to hepatitis in World War I. This led to the disclosure of a similar action of TNT. The allowable safe concentration of tetrachloroethane vapor in the atmosphere is only 10 parts per million by volume. It should only be used in well-engineered and rigidly controlled, closed equipment, never in open equipment or in any manner that allows skin contact or inhalation of vapors. Its use was banned for many years in Germany.

Carbon tetrachloride can probably be absorbed through the skin. It is volatile and when inhaled passes rapidly into the blood stream. Frequent exposure to concentrations as low as 45 parts per million can interfere with liver function. It has been shown in a number of experiments on laboratory animals that inhalation of carbon tetrachloride vapors lead rapidly to constriction of the sinusoids of the liver. In acute exposures, carbon tetrachloride is narcotic. This may be its only immediate effect, but not infrequently there may be delayed action on the kidneys, leading to complete anuria and severe damage to the tubules. Less frequently there may be a delayed hepatitis which, like hepatitis from TNT, appears to involve lack of oxygen supply to the liver and a central lobular necrosis. Either the damage to the kidneys or to the liver may cause death.

Trichloroethylene and perchloroethylene are essentially narcotic. Trichloroethylene may offer a particular hazard to some people if they find the effects pleasant. It will produce a condition similar to "ether jags," with a feeling of exhilaration and intoxication much like the more pleasant phases of alcoholic intoxication. For this reason some workers will deliberately expose themselves to heavy concentrations of vapor, often with serious and even fatal results. Fat solvents of this type, if entrapped between clothing and skin, either as liquid or vapor, can produce severe burns. One interesting case came to my attention. A convict in a western penitentiary, working with a degreaser, became an addict to trichloroethylene. One day he took a bottle of the solvent to his cell, got into bed, and covered himself with a blanket, apparently inhaling the trichloroethylene under the blanket. He either spilled the trichloroethylene or a

high concentration of vapors was produced under the blanket causing a severe dermatitis. Photographs showed a widely distributed erythema which made him look almost like a boiled lobster.

When inhaled in high concentrations, trichloroethylene may interfere with the uptake of oxygen by the tissues. The venous blood oxygen content approaches that of the arterial blood. When fatalities occur as a result of excessive narcosis by trichloroethylene, the appearance of the blood is similar to that in carbon monoxide or cyanide poisoning. A number of fatalities from trichloroethylene have occurred after unnecessary exposure, not because of some particular toxic action, but because of circulatory failure. Although it has no immediate, apparent effect, continuous exposure to trichloroethylene, possibly at concentrations of from 300 to 400 parts per million, seems to make a worker more sensitive to an acute exposure. Inhalation of high concentrations of the vapors may lead only to dizziness but, if during the period of dizziness the worker undergoes excessive physical exertion, there may be acute circulatory collapse. A number of patients of this type were observed in England several years ago, and two workers collapsed while bicycling home after an unnecessarily high exposure to trichloroethylene. Deaths of the "bedpan" type have also occurred following excessive exposure. Such exposures, however, need never occur and will not occur if one pays particular attention to proper engineering of degreasing equipment and eliminates those workers who appear to be addicts.

The literature contains various references to older cases of alleged trichloroethylene poisoning in which widespread and bizarre symptoms and signs were reported, but there seems to be no clean-cut proof that trichloroethylene alone injures either the kidneys or the liver. If trichloroethylene is swallowed (which has occurred when, as a joke, it has been put in a soft-drink bottle) there is a period of narcosis and complete anuria. When the narcosis disappears, the kidney function reappears and, so far as I know, there have been no permanent effects.

No severe injuries have occurred in the use of perchloroethylene. Its effect as a narcotic is not as pleasant as that of trichloroethylene, and it apparently does not produce addiction. There is no proof that injury of liver or kidneys has been produced by perchloroethylene.

PROTECTIVE MEASURES

The third question is "How can we protect our workers against these chemicals?" Because the two common routes of passage of chemicals into the body are through the skin and through

the respiratory tract, it is obvious that cleanliness of equipment, surroundings, and clothing and personal cleanliness of workers are essential to reduce skin contact. Soap and plenty of water are often better preventives than so-called "protective clothing." If one is not careful, contaminated clothing can act not only as a reservoir for absorption through the skin but, in the case of volatile chemicals, as a source for inhalation of relatively high concentrations of vapors. Provision of adequate changes of clothing (including underclothing and shoes), and of proper showers with suitable soap and enforcement of rules respecting showers, so that no worker leaves the plant in contaminated clothing, are the major ways of solving the skin problem. Protective creams can often be a hazard. Unless it is proved that a particular cream specifically prevents absorption of a given chemical through the skin, it should not be used.

Cleanliness of the atmosphere in a working area is of great importance. Reduction of dust and removal of hazardous vapors are problems for the engineer. The physical properties of the compound involved determine the particular program of ventilation. It should be a basic principle that dusts, vapors, mists, fumes, and gases must be removed at their source. It is not wise to attempt protection by mere dilution. This may spread the area of possible exposure of workers far beyond the area of the immediately hazardous job.

EFFECTIVENESS OF PROTECTIVE MEASURES

My fourth question, "How shall we assess the value of our protective measures?" leads us into the medical portion of this paper. I have continually expressed the opinion that it does not matter what is in the atmosphere of the workplant—the atmosphere could actually be violet with yellow stripes—so long as no worker is affected by it. One cannot demonstrate by chemical analysis of the atmosphere, but only by examination of the worker, that a worker is or is not affected. The major duty of a physician in industries using hazardous chemicals is to watch the worker continually. This is best done by frequent visits to the working areas and by observing each worker at his job. In this manner one can detect operation practices that may lead to unnecessary health hazard. Observation of the worker in this way must be supplemented by some form of medical examination. Yet, conditions in industry and the multitude of different compounds that may be involved restrict severely the type of examination which can be employed.

For nearly 18 years I have observed a large number of workers exposed to a wide variety of chemicals and have supplemented these studies by many animal experiments. As I stated many years ago, regardless of the chemical nature of a hazardous

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material, a definite pattern of symptoms and a few physiologic signs are always observed when that chemical enters the body in adequate amount to have any effect upon its function, and before it has any permanent effect upon the structure of tissues. The symptom pattern includes headache, nausea and other gastrointestinal disturbances as belching, constipation or diarrhea or both, loss of appetite, epigastric pain, dizziness, and, in severe cases, dyspnea on slight exertion, palpitation, precordial pain, pain in the extremities, and at the back of the neck. These complaints of pain, particularly in the extremities, the back of the neck, or over the precordium, should never be neglected.

The signs which invariably occur are changes in pulse rate and in arterial blood pressure. Acute exposures tend first to reduce systolic pressure without diminishing diastolic pressure. Thus, pulse pressure is reduced and the efficiency of blood supply to the muscles is diminished. Later there may be a greater fall of systolic pressure and of diastolic pressure, and eventually systolic pulse pressure and diastolic pressure may reach very low levels. A condition similar to orthostatic hypotension may then exist. These acute episodes of circulatory imbalance rapidly disappear on removal from exposure and often even more rapidly on inhalation of 100 percent oxygen. Chronic exposures to concentrations of chemicals, not actually causing damage of an organ, may lead to chronic diastolic hypertension.

Over a number of years we have used various statistical methods of assessing trends in arterial blood pressure to indicate situations that are producing adverse trends in health of workers. We have frequently used such statistical studies to demonstrate the relative hazard in group operations. By this means we have sometimes discovered hazards of which we were formerly unaware. For example, in a TNT plant, a summary of blood pressure records, taken every 3 weeks on occupation groups, was used to assess the relative exposure in the various operations. Our indexes of blood pressure abnormalities showed a trend of relative hazard in the operations which fitted the known physical conditions of the operation. However, one group, not expected to be exposed to TNT or other toxic materials, showed a blood pressure record far from normal. It was found that their place of work was not ventilated and that the men were stenciling TNT boxes with a spray of ink containing about 80 percent cresylic acid. The literature contains only one reference to the effects of inhaled cresylic acid in which it is reported that the compound, when inhaled, affects the central nervous system and the heart muscle. These effects are not so apparent when the chemical is absorbed through the skin or when swallowed.

Adverse trends in blood pressure records sometimes indicate that workers have failed to take their daily baths at the end of the day, and have gone home with contaminated skin and clothing. Their duration of exposure to toxic chemicals has increased and they soon have physiologic signs.

The measurement of blood pressure is, of course, not the only method of following the health of workers. Where chemicals may act upon the hematopoietic system, frequent evaluation of hemoglobin, red cells, leukocytes, and, perhaps, platelets are important. Urinalyses may be useful. I have seldom used these and only to disclose unnecessary exposure to chemicals in different operations rather than for diagnostic purposes. Unfortunately, adequate methods of detection of many of these toxic chemicals in the urine do not exist, and in large plants a program of frequent urinalysis may be complicated and difficult to set up. The situation with respect to urine excretion of organic chemical compounds is not the same as that existing in the case of lead and inorganic chemical compounds.

Whatever method is used to obtain quantitative data on the conditions of workers exposed to chemicals, it should lead to frequent observation of each worker by the plant physician who will be able to see when the workers are failing in health. By frequent contact with the men, and particularly contact on the job, he will gain their confidence. This will have two results: Not only will the morale of the individual worker be raised, but he will tend to come to the physician and to tell him of factors in both his industrial life and in his home life which may be of the utmost importance in controlling the health in the plant. In these days of a 40-hour workweek, only the smaller fraction of a worker's life is spent in the plant. That part spent out of the plant is at least as important in conditioning the worker's total health and his ability to resist hazards from chemicals as is that part spent in the plant. Any procedure that will help the physician to gather information about the total life of the worker is essential to a satisfactory program of conservation of health. In industry we are studying the whole man. Data from clinical study of sick people are not necessarily directly applicable to the healthy worker. Treatment of infections has so advanced in recent years that diseases of stress are assuming greater importance than diseases caused by bacteria or poisoning. Such diseases are due to our attempt to live with our environment, often with an environment which we ourselves manufacture. In the study of the basic factors entering into degenerative diseases, industrial medicine conducted in the manner I have suggested is at the forefront of medical research.

INCIDENCE OF RUBELLA AT AN ARMY POST

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RUBELLA, or German measles is an acute, infectious, eruptive disease, characterized by a long incubation period, a short invasive stage, a benign course, and an almost complete freedom from complications. Due to the lack of specific control measures and its benign course, little attention has been paid to its occurrence in military camps and posts. Since 1945, various investigations have demonstrated a link between the incidence of German measles in women during the first trimester of pregnancy and the appearance of congenital anomalies in their infants born subsequently. During severe epidemics meningoencephalitis, endocarditis, and nephritis have been reported as sequelas of this disease. Because of these observations, a study was made of the incidence of this disease in military personnel at Fort Dix, N. J., during 1948-1952 to evaluate the man days lost attributable to it.

METHOD OF STUDY

This post had an average assigned military population of 23,000 troops, during the study of which about 10,000 were seasoned cadre and 13,000 were new recruits sent to the post for basic training. This post is situated near several large cities (Trenton, Philadelphia, and New York) where soldiers often visit when on leave. Recruits arrive from all sections of the country, and there is no segregation by race or geographic area.

The recruit training is organized in 8- and 16-week cycles; 80 percent of it being 16 weeks. The sixth, thirteenth, and fourteenth weeks of training are spent on bivouac. A few days after arriving on the post each recruit is assigned to a training company. When the full complement of recruits is present, the company begins its training cycle. After completion of training the men are transferred from the post and the company receives a new complement of recruits for the next training cycle. For the first 4 weeks the recruits are restricted to the post. They

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are housed in 63-man barracks and each building is occupied by men of the same unit. There are company messes serving a single company, and consolidated messes serving several. There is intermingling of men from different companies, and of recruits with seasoned men, at post exchanges, service clubs, theaters, and on buses.

The study was limited to assigned military personnel who were hospitalized on the post for suspected rubella. Each patient was first examined by a dispensary physician, again by the physician in charge of the outpatient clinic of the hospital and, finally, by the medical officer in charge of the contagious disease ward. The latter was usually a physician who had completed one or more years of a residency in pediatrics, or two or more years in internal medicine. The final diagnosis of the medical officer in charge of the contagious disease ward was used in this study. Of the admissions in the first half of 1952, a record was made of the age, race, length of hospitalization of each patient, and whether he was a recruit or in a cadre. If he was a recruit, a record was also made of the duration of his training. By these methods an attempt was made to compare the incidence of rubella with that of common respiratory diseases reported by Sartwell.[1]

RESULTS

A comparative study of the incidence of rubella by calendar months from 1948 to 1952 indicates that from November 1948 through October 1950, German measles was not a major problem. The incidence rate of rubella never rose above 19 per thousand per annum and only once reached that level (January 1950). In the period from November 1950 through June 1952, the incidence was higher. A peak of 123 per thousand per annum was recorded for April 1951, and 77 per thousand per annum was reached in March 1952.

From 1 January to 31 December 1951, 628 patients were hospitalized for rubella. The rate began to climb rapidly in the third week of March, reached its peak in the third week in April, and declined sharply the second week of May. It reached a secondary peak during the third and fourth weeks of May and then rapidly declined. Relatively high rates were recorded for the months of June and July.

The disease appeared much earlier in 1952. Higher rates occurred in January, February, and the first week in March than were reached in 1951. The peak for the year occurred during the second and third weeks of March, and then declined rapidly. A secondary peak occurred during the final week in March and the first week in April, but dropped sharply during the second

week of April. It never again reached these high levels during the period covered by this study.

TABLE 1. *Incidence admission rates* for rubella, January - June 1952*

Month	White recruits	White cadre	Negroid recruits	Negroid cadre
January	23.8	17.1	24.3	00.0
February	48.1	30.0	00.0	00.0
March	101.9	51.6	17.4	39.6
April	73.6	16.5	39.7	29.3
May	19.1	10.7	21.7	00.0
June	7.1	2.8	00.0	00.0
Mean rate	45.6	21.5	17.2	11.5
Mean strength	11,405	8,719	1,370	1,220

*Per 1,000 per annum for calendar months.

In table 1 the incidence rates of rubella during the first 6 calendar months of 1952 are presented in relationship to race and status. These data show that the incidence of this disease was significantly higher in Caucasian than in Negroid troops, but was lower in seasoned personnel than it was in recruits. The racial factor may be partially explained by the difficulty in diagnosing this disease in Negroid troops. Because the symptoms were mild, most patients did not report on sick call until a rash was noted. In Negroes this eruption is more difficult to detect. The higher rate in recruits, as contrasted to cadre members, compares favorably with the data accumulated by Sartwell for common respiratory diseases, as well as with the studies of the Commission on Acute Respiratory Diseases at Fort Bragg during World War II.[2,3]

Table 2 shows the incidence of the disease in recruits according to the training week of occurrence. A study of all personnel on the post revealed that the total number of training companies in bivouac remained relatively constant during the period 21 January to 25 May 1952. The number of companies in the specified week of training also remained essentially the same during this interval. The highest incidence for rubella occurred during the fourth and fifth weeks, and declined sharply in the sixth week. The reasons for the low rates in the later weeks of the training cycle are not known. The high rates in the fourth and fifth weeks are similar to data accumulated for common respiratory diseases by Sartwell, but the relatively high rate

in the seventh week of training at this post did not occur in his data.

TABLE 2. *Number of cases of German measles in recruits by week of training January - June 1952*

Week of training cycle	White	Negroid
0 - Filling	13	1
1	9	0
2	16	1
3	19	0
4	38	3
5	33	2
6	19	1
7	27	1
8	14	1
9	8	0
10	12	0
11	9	1
12	6	0
13	10	0
14	6	0
15	8	1
16	6	0
0 - Shipping	15	0

From 1 January to 7 July 1952, a total of 388 persons was hospitalized for rubella. The ages of recruits admitted to the hospital during this period ranged from 17 to 24 years with a mean of 20.2; the ages of cadre members admitted during the same period were from 18 to 34 years, with a mean of 21.9. The average length of hospitalization for recruits was 6.3 days, and for cadre members was 5.8 days. The end result was a loss of approximately 2,400 man-days of training time.

SUMMARY

During a 3½-year period the incidence of rubella at an Army post was significantly higher in recruits than in seasoned personnel. During 1952 it was higher in Caucasian than in Negroid troops. The highest incidence in recruits occurred during the fourth and fifth weeks of basic training in 1952. Rubella is of considerable military importance in terms of man-days lost from

training despite its mild course and relative lack of complications.

REFERENCES

1. Sartwell, P. E.: Common respiratory disease in recruits. *Am. J. Hyg.* 53: 224-235, Mar. 1951.
2. Commission on Acute Respiratory Diseases: Acute respiratory disease among new recruits. *Am. J. Pub. Health* 36: 439-450, May 1946.
3. Epidemiology of atypical pneumonia and acute respiratory disease at Fort Bragg, N. C. *Am. J. Pub. Health* 34: 335-346, Apr. 1944.

Radiation of the Liver

The first palliative treatment for advanced liver cancer, which had "always been regarded as hopeless," was reported recently to the American Radium Society in St. Louis. It was stated that large amounts of x-ray delivered directly to the liver improved its function and, in 28 out of 36 cases, temporarily relieved such symptoms of cancer as pain, abdominal distension, nausea, weakness and fever, and loss of appetite. According to the report, cancers which had spread to the liver were considered "hopeless" because it was generally thought that normal liver tissue is as sensitive to x-rays as cancer tissue and that liver function would be destroyed by radiation.

The patients were treated with large quantities of x-rays, varying from 2,000 to 2,750 roentgens. Using 1,000,000-volt radiation equipment, equal quantities of x-rays were delivered to the entire liver by radiating the patient both anteriorly and posteriorly. The investigators found no evidence of damage to the normal liver tissue at even the highest dose level of x-rays. Improvement lasted from two to seven months. These studies appear to indicate that patients with advanced widespread cancer which has involved the liver may now be regarded as amenable to palliative treatment.

—from *Cancer Control Letter*

THE EFFECT OF ORAL ESTROGENS ON SERUM CHOLESTEROL AND TOTAL LIPIDS

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IN 1936 Levy and Boas[1] in studying several thousand patients came to the conclusion that coronary artery disease was 4.9 times as frequent in men as in women; of these women with coronary artery disease, 93.3 percent had arterial hypertension or diabetes mellitus.

In 1950, White et al.[2] examined 600 hearts from men at autopsy for the amount of coronary sclerosis. One hundred hearts were selected consecutively in each of the six decades from 30 through 80. They showed that the degree of coronary sclerosis was not linearly related to age in man. It increases in the 30 through 49 year age group, reaching a maximum in the 50 through 59 year age group, and thereafter remains at a fairly constant level. Ackerman et al.[3] similarly examined 600 hearts from women. In those the average degree of sclerosis did not rise until the fourth decade but rose steadily from this point to the eighth decade where it leveled off. It is in the fourth decade that ovarian activity begins to wane in most women.

Although Gofman et al.[4] stated that there is little correlation between the total serum cholesterol levels and atherosclerosis, it would seem that a relationship does exist. At least significant cholesterol elevation is often present in those with coronary artery disease. Keys[5] reported a high degree of correlation between the concentration in human blood serum of total cholesterol and the "giant molecules" (G substances). He stated that the time had not yet arrived to abandon the well-established idea that there is an important relationship between the concentration of cholesterol in the blood plasma and the development of atherosclerosis and coronary heart disease. After carefully comparing analyses from Gofman's group with the study of Gertler et al.,[6] which dealt with the cholesterol levels in normal persons and

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patients with coronary disease, Keys stated, "There is no evidence that the concentration of G is more critical than that of total cholesterol."

Steiner[7] after studying several hundred patients found that serum cholesterol levels were higher in patients with overt atherosclerosis than in normal persons. Other investigators who have found an elevated serum cholesterol in patients with coronary artery disease include Priddle,[8] Davis et al.,[9] Steiner and Domanski,[10] Lerman and White,[11] and Morrison et al.[12]

The lower incidence of atherosclerosis in women of the childbearing age is well known. During this period of greatest ovarian activity the average cholesterol values in women are less than those in men of comparable age. At this hospital serum cholesterol determinations are not done routinely on the patients in women's general medical and officers' wards, but those done during 1952 and 1953 revealed the following average levels of total cholesterol in mg. per 100 ml. blood: 38 premenopausal patients, none with diabetes, 176; these patients and 5 with diabetes, 193; 47 postmenopausal patients, none with diabetes, 259; and these patients and 9 with diabetes, 265. In 55 male patients under the age of 50, 261; 44 over the age of 50, 258; 42 without diabetes, atherosclerosis, or reference to age, 223; 53 with arteriosclerosis, 284; and 47 with no evidence of atherosclerosis, 231.

Men of all ages and postmenopausal women tend to have nearly the same cholesterol average levels which are higher than those of premenopausal women. Wuest of the Mayo Clinic found that the degree of coronary atherosclerosis in bilaterally oophorectomized women was greater in each decade of life than in a control series. György and Rose[13] have demonstrated that estrogens have a definite lipotrophic activity in inbred rats.

The present study was conducted to note the effects, if any, of oral estrogens upon cholesterol and total lipid levels in men.

METHOD OF STUDY

After determination of the pretreatment cholesterol and total lipid levels, 18 persons were continued on their usual pretreatment diet and given 5 mg. (1.25 mg. four times a day) of oral estrogens (premarin) daily.

Serum cholesterol was determined by the method of Bloor[14] and the total lipid by the method of Kunkel et al.[15] Blood was drawn at the same time each week and all tests were performed immediately by the same technician.

Seventeen men and one postmenopausal woman received the drug (table 1). Twelve of the men had had one or more proved myocardial infarctions, two had mild hypertension, one had arterio-

TABLE 1. *Summary of significant findings in patients studied*

Patient	Age	Height	Weight	Build	Blood pressure	History	Weeks of estrogen treatment	Side effects
1	51	74	190	Ectomorph	95/60	Acute anterior myocardial infarction 27 June 1952.	6	None
2	61	66	145	Mesomorph	115/70	Acute anterior myocardial infarction June 1952.	5	Breast soreness
3	37	72	190	Ectomorph	188/108	Transient hypertension for three years.	9	Breast soreness
4	56	72	166	Ectomorph	110/70	Acute posterior myocardial infarction 2 December 1953. Angina of effort.	11	None, angina relieved but returned
5*	57	66	135	Mesomorph	155/80	Mild cerebrovascular accident August 1952.	9	Withdrawal bleeding
6	48	70	172	Mesomorph	120/70	Anterior myocardial infarction 1945. Second infarction 10 September 1952.	12	Breast soreness
7	33	70	180	Mesomorph	110/56	Severe coronary artery disease. Posterior myocardial infarction. In hospital six months. Died during estrogen treatment.	3	None

*The female patient.

TABLE 1. *Summary of significant findings in patients studied*—Continued

Patient	Age	Height	Weight	Build	Blood pressure	History	Weeks of estrogen treatment	Side effects
8	67	66	142	Ectomorph	155/70	Retired from Army 1945 for "generalized arteriosclerosis."	14	Decrease in libido
9	63	66	175	Endomorph	160/90	Severe pruritus of unknown cause. No known coronary disease.	11	None, felt better
10	39	66	178	Endomorph	110/66	Acute anterior myocardial infarction 12 October 1952.	25	None
11	42	71	185	Mesomorph	160/100	Mild hypertension two years. Retired from Army for anxiety reaction, 1947.	2	Severe nausea
12	69	71	182	Mesomorph	130/88	Anterior myocardial infarction July 1952.	12	Breast soreness
13	60	68	168	Mesomorph	160/90	Arteriosclerotic heart disease with RBBB and mild angina since 1944.	11	Breast soreness
14	59	70	150	Mesomorph	250/150 130/75	Hypertension since 1946. Precordial pain since 1949. Posterior myocardial infarction.	8	Breast soreness
15	61	65	130	Mesomorph	112/72	Anterior myocardial infarction 17 September 1952.	9	Breast soreness

TABLE 1. *Summary of significant findings in patients studied*—Continued

Patient	Age	Height	Weight	Build	Blood pressure	History	Weeks of estrogen treatment	Side effects
16	58	72	158	Ectomorph	110/66	Anterior myocardial infarction 1946.	9	Breast soreness
17	58	66	176	Mesomorph	130/80	Anterior myocardial infarction 2 August 1952. Angina since 1933.	12	None, angina relieved but returned
18	36	74	200	Mesomorph	110/76	Posterior myocardial infarction 24 April 1952.	4	None

sclerotic heart disease without infarction, one had been retired from the Army in 1945 for "generalized arteriosclerosis"; and one had severe generalized pruritus of unknown cause. The woman had had a mild cerebrovascular accident, from which she had fully recovered except for periods of mild depression. The ages of the men varied from 33 to 69 years, the average being 52; the woman was 57 years old.

RESULTS

The patients received the drug from 2 to 25 weeks each. The drug was discontinued in nine patients because of side effects, chiefly breast soreness. Four patients moved from the immediate vicinity and a follow-up could not be obtained. Another died during treatment. The remaining four were having no side effects when the drug was discontinued arbitrarily (table 2).

Reduction in the cholesterol and total lipid levels occurred in all but two of the patients. One of these discontinued the drug after two weeks because of severe nausea and vomiting and it was doubtful if he retained any significant amount of the estrogen. The other moved away after four weeks.

In general, but not always, the total lipid levels paralleled the total cholesterol levels. The time of maximum drop in cholesterol levels varied from 2 to 10 weeks, averaging about 6 weeks. The magnitude of the maximum drop varied from 50 mg. to 228 mg. per 100 ml., averaging 90 mg. (including the two failures). As the drug was continued the trend of the cholesterol values was toward the previous levels. Cholesterol values returned to pretreatment levels, in most instances, after cessation of the drug.

The nine men who developed breast soreness did so during the sixth to the eleventh week. In general it was mild and not incapacitating. Six men noted no side effects, but one had severe nausea and the drug was discontinued at the end of two weeks. One, age 67, complained of loss of libido. The woman patient experienced no side effects except when she stopped taking the drug during an attack of influenza. This was followed by withdrawal bleeding that lasted for 10 days.

The patient who died during the study was a 33-year-old man who had severe coronary artery disease and had been hospitalized for six months. Postmortem examination showed extensive myocardial damage due to old and recent myocardial infarctions. Two men obtained relief from "angina" early in the treatment but their symptoms gradually returned with continued estrogen administration.

TABLE 2. *Total serum cholesterol* and lipids** mg./100 ml.*

Patient	Prior to therapy	Number of weeks of therapy																	Number of weeks after cessation of therapy					
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	16	18	21	25	2	3	4	5	6	8
1	468 790				280 675		240 615																		
2	390 938	300 750	267 563			255 650														327 750					
3	380 705	283 687			260 650			208 625		210 620															
4	380 756		350 750	279 737			258 690		238 600			251 615													
5	300 731		180 765		234 739					275 758										314 938		340 869			336 1103
6	295 804		240 740			227 694	220 676		320 725		193 627			195 602								308 738			
7	294 720	321 698		222 675																					

TABLE 2. *Total serum cholesterol* and lipids** mg./100 ml.*—Continued

Patient	Prior to therapy	Number of weeks of therapy																		Number of weeks after cessation of therapy					
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	16	18	21	25	2	3	4	5	6	8
8	284 700	222 824		280 780		216 771		179 690			192 848		240 850		272 640					285 1050		285 902		300 875	
9	280 715		274 757		231 798			169 738		238 706		250 646									275 970			288 775	
10	266 652	250 637	200 600				190 498			180 500		200 460		205 475		203 502	202 490	201 510	200 525						
11	267 817	260 850	360 781																						
12	254 715	196 606			265 839		232 710		260 808		280 806		272 529							280 808				268 758	
13	250 690		258 702	270 740		192 625		190 720		218 737		193 704											180 702		
14	250 648	225 580		196 575		200 595		215 600	260 650																
15	231 670	220 652		190 637		200 628		228 615		174 600													170 632		

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TABLE 2. *Total serum cholesterol* and lipids** mg./100 ml.* — Continued

Patient	Prior to therapy	Number of weeks of therapy																		Number of weeks after cessation of therapy					
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	16	18	21	25	2	3	4	5	6	8
16	220 710	230 668				190 605				170 725														250 875	
17	216 715	215 715	214 646		200 650		172 624		192 682		205 658		216 700							214 542		208 670			240 555
18	207 880		229 914		223 814																				

*The cholesterol value is the upper number in each square.
**The lipids value is the lower number in each square.

CONCLUSIONS

Oral estrogens will lower the cholesterol and blood lipid levels in men but the decrease is not generally maintained on continued treatment. The side effects, though not usually severe, may be objectionable.

SUMMARY

Seventeen men and one woman were given 5 mg. of oral estrogen (premarin) daily in divided doses after meals and at bedtime for periods varying from 2 to 25 weeks. A decrease in cholesterol and total lipid levels occurred in all but two men, and the maximum decrease averaged 90 mg. per 100 ml. and occurred from the second to the tenth week. With continued therapy or cessation of therapy the cholesterol and total lipid levels began to return to the pretreatment levels. Side effects were not marked, the most common being breast soreness, which occurred after an average of about eight weeks of therapy. Severe nausea occurred in one patient.

REFERENCES

1. Levy, H., and Boas, E. P.: Coronary artery disease in women. *J. A. M. A.* 107: 97-102, July 11, 1936.

2. White, N. K.; Edwards, J. E.; and Dry, T. J.: Relationship of degree of coronary atherosclerosis with age, in men. *Circulation* 1: 645-654, Apr. (pt. 2) 1950.

3. Ackerman, R. F.; Dry, M. B.; and Edwards, J. E.: Relationship of various factors to degree of coronary atherosclerosis in women. *Circulation* 1: 1345-1354, June 1950.

4. Gofman, J. W.; Jones, H. B.; Lyon, T. P.; Lindgren, F.; Strisower, B.; Colman, D.; and Herring, V.: Blood lipids and human atherosclerosis. *Circulation* 5: 119-134, Jan. 1952.

5. Keys, A.: Cholesterol, "giant molecules," and atherosclerosis. *J. A. M. A.* 147: 1514-1519, Dec. 15, 1951.

6. Gertler, M. M.; Garn, S. M.; and Lerman, J.: Interrelationships of serum cholesterol, cholesterol esters and phospholipids in health and in coronary artery disease. *Circulation* 2: 205-214, Aug. 1950.

7. Steiner, A.: Cholesterol and arteriosclerosis, with special reference to coronary arteriosclerosis. *M. Clin. North America* 34: 673-683, May 1950.

8. Priddle, W. W.: Hypercholesteremia: an analysis of 529 cases and treatment of 297 by a low animal fat diet and desiccated thyroid substance. *Ann. Int. Med.* 35: 836-847, Oct. 1951.

9. Davis, D.; Stern, B.; and Lesnick, G.: Lipid and cholesterol content of blood of patients with angina pectoris and arteriosclerosis. *Ann. Int. Med.* 11: 354-369, Aug. 1937.

10. Steiner, A., and Domanski, B.: Serum cholesterol level in coronary arteriosclerosis. *Arch. Int. Med.* 71: 397-402, Mar. 1943.

11. Lerman, J., and White, P. D.: Metabolic changes in young people with coronary heart disease. *J. Clin. Investigation* 25: 914, 1946.

12. Morrison, L. M.; Hall, L.; and Chaney, A. L.: Cholesterol metabolism; blood serum cholesterol and ester levels in 200 cases of acute coronary thrombosis. *Am. J. M. Sc.* 216: 32-38, July 1948.

13. György, P., and Rose, C. S.: Lipotropic effect of estrogenic hormones in inbred rats. *Proc. Soc. Exper. Biol. & Med.* 71: 552-555, Aug. 1949.

14. Bloor, W. R.: Determination of cholesterol in blood. J. *Biol. Chem.* 24: 227, Mar. 1916.

15. Kunkel, H. G.; Ahrens, E. H., Jr.; and Eisenmenger, W. J.: Application of turbidimetric methods for estimation of gamma globulin and total lipid to study of patients with liver disease. *Gastroenterology* 11: 449-507, Oct. 1948.

DIPHTHERIA OUTBREAK IN ALASKA

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DURING October 1952 more than 100 patients with diphtheria were diagnosed on the basis of clinical findings or laboratory examinations among residents of 11 villages on the southwestern mainland of Alaska. There were 20 cases reported and 2 deaths occurred among the 188 people at Akiachak at that time. In late November and early December at least 6 additional deaths, presumably due to primary diphtheria or its complications, occurred in the same Eskimo village. This report presents the clinical, laboratory, and epidemiologic data with particular respect to the events at Akiachak.

The area shown on the map (fig. 1) is typical flat tundra country, with innumerable lakes and streams. There are about 60 villages in the region, mostly along the Yukon and Kuskokwim Rivers, and the Bering Sea coast. The few so-called "tundra villages" are actually on waterways with access to either the two main rivers or the sea.

Bethel is the social and economic hub of the area. Its population of about 500 Eskimos and 100 people of white blood was augmented by another 100 construction workers (almost all white) during the summer and early fall of 1952. None of the many villages along the two rivers or the coast has a population of more than 200 although their total population is about 6,000. Except for storekeepers, teachers, and their families, the inhabitants are Eskimos. The high birth and death rates (both about 45 per 1,000 per year) result in population distributions different from those of the continental United States. For example, the 1950 census showed that about 50 percent of the Eskimos in this area were under 20 years of age whereas in the United States less than 35 percent were in that age group.

The economy of this area is dependent on the salmon that spawn in the Kuskokwim and lower Yukon Rivers and constitutes a large part of the diet, supplemented by other fish and game animals, for both the natives and their dogs. The natives make a living from trapping and from employment in the Bristol Bay salmon canneries for five weeks during the summer. Housing is primitive (fig. 2) and the only well-built structures encountered in Akiachak and elsewhere were the churches, trading posts, and schools. The Alaska Native Service officer at Bethel main-

From the 5005th U. S. Air Force Hospital Group.

tained morning and evening radio contact with each of the villages which have a schoolteacher employed by the Service. Mail planes from Bethel stopped at almost all of the villages at least twice a month, weather permitting.

Figure 1. Map shows area and villages in which diphtheria outbreak occurred.

The medical services available in the area were minimal. Since a fire destroyed the small hospital at Bethel in 1950, the Alaska Native Service has maintained a six-bed emergency unit there staffed by a physician and six nurses. The Alaska

Department of Health provided three public health nurses at Bethel. These two groups constituted the health facilities for an area greater in size than the state of Illinois but sparsely populated. The U. S. Air Force through its air-sea rescue evacuated seriously ill or injured patients to Anchorage for further care.

On 6 and 7 October radio reports of three or four unexpected deaths near Chifornik and one at Akiachak were received at

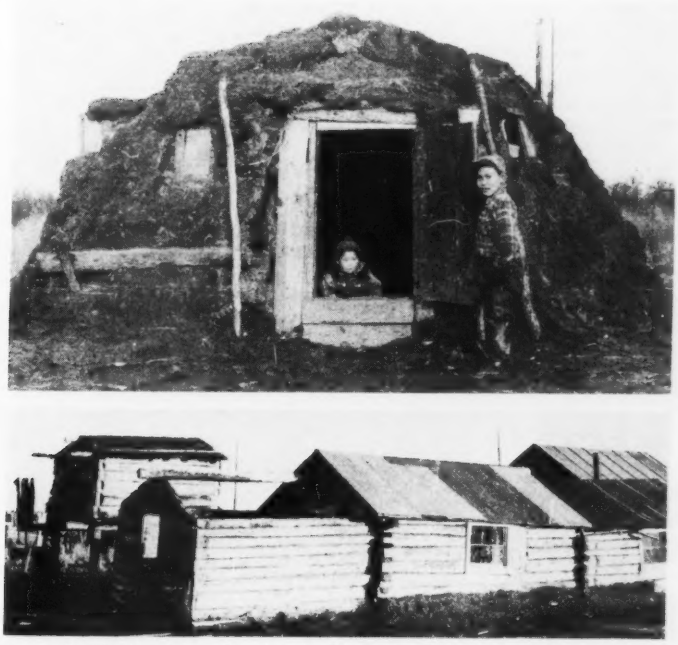

Figure 2. Typical Eskimo housing in Alaska tundra country along Kuskokwim River.

Bethel. Nothing could be done immediately for the patients at Chifnorik, but arrangements were made to bring those acutely ill at Akiachak down the river to Bethel on 8 October. Laboratory service was not available locally, but throat smears and swabs from the patients at Akiachak were sent to Anchorage for examination. A preliminary negative report for *Corynebacterium diphtheriae* was followed by a positive report on 9 October.

Because of the imminence of the "freeze-up" which paralyzes transportation by land, water, or air, the next three weeks were a frenzied period of examination, treatment, and prophylaxis at most of the 60 villages in the area. Two physicians and six nurses successfully aborted the outbreak with little regard for their personal health or physical safety. The summary of the significant findings (table 1) obtained on one or two visits to each village is based on observation and on brief clinical examinations.

TABLE 1. *Observations on diphtheria outbreak, October 1952*

	Estimated population	Estimated number examined	Suspected cases	Suspected deaths
Diagnosis confirmed by laboratory reports positive for *C. diphtheriae* on one or more suspected cases				
Akiak	170	130	3	–
Akiachak	188	125	20	2
Bethel	600	?	19	–
Kwethluk	240	180	12	–
Pilot Station	50	?	7	–
No laboratory examinations or reports				
Chifornik-Kalvinrok	106	?	23	6
Eek	140	125	4	–
Napaiskak	120	120	4	–
Napakiak	140	25	6	–
Tuluksak	115	100	4	–
Upper Kalskag	140	110	7	–

The symptoms reported by the hospital at Bethel were a dry, parched and extremely painful throat combined with difficult and painful swallowing. No history or instance of regurgitation of liquids through the nasal passages was elicited. There was no report of a membranous pharyngitis observed in any patients by trained personnel until 31 October when an adult male attendant complained of the above symptoms.

On 24 November, after 24 days of calm, 2 women and 2 children from the village of Akiachak (fig. 3) were brought to the hospital at Bethel by dog sled. All had the symptoms observed in the October wave including sore throat, difficulty in swallowing, and

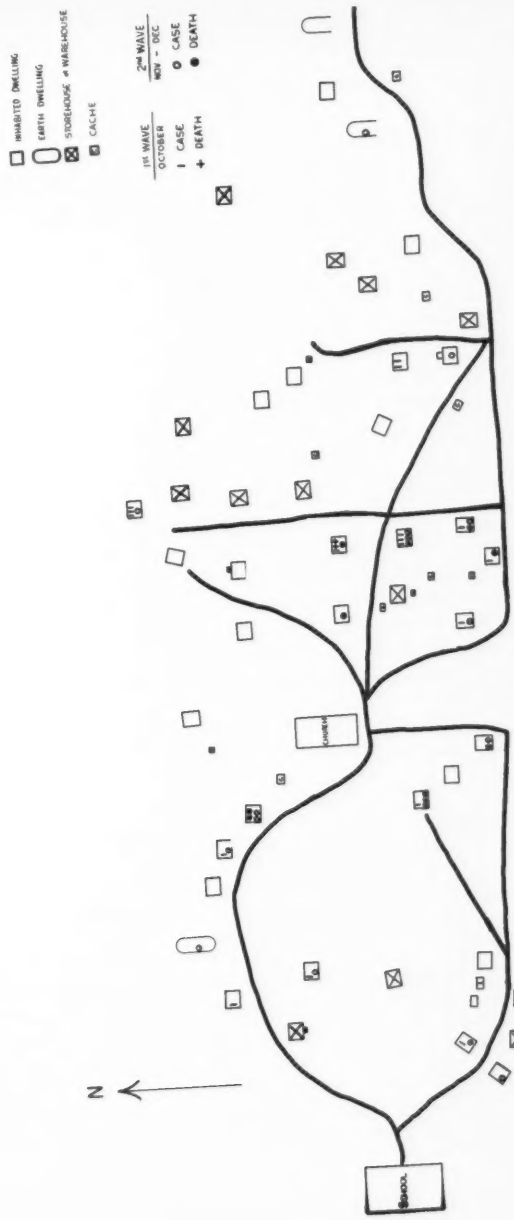

Figure 3. Map of distribution of patients with diphtheria in village of Akiachak indicates transmission by direct contact.

apparently respiratory muscle paralysis. These patients appeared extremely ill and one of the women died within six hours. She had previously been admitted on 8 October and remained hospitalized until 1 November when she was returned home. On the second admission she had respiratory impairment with cyanosis, rapid pulse, and abdominal respirations. Another woman, 32 years old, had identical symptoms of dry mouth and pharynx, and difficulty in swallowing and breathing. She was cyanotic and her respirations were abdominal in character. She was given artificial respiration and oxygen and, with two children, was flown to the U. S. Air Force Hospital at Anchorage where she was seen by the author. Physical examination revealed an extremely dry, beefy pharynx but no gross paralysis or paresis. The nasopharynx, larynx, and nasal cavities were dry and crusted. She did not require artificial respiration but was given oxygen. On the second day in the hospital she died of circulatory failure and toxic myocarditis. A blood culture was positive for *C. diphtheriae*.

The two children improved in the hospital and after 30 days had negative cultures. Examination of each revealed a dry, beefy throat, crusty secretion, and an overlying dry beefy-red nasal mucosa. The nasopharynx was clear. Except for catarrhal otitis media, the balance of the examination was negative. Although the difficulty of these patients in swallowing was real, the cause was actually the local inflammation of mucosa rather than paresis or paralysis. In spite of some intercostal weakness of questionable degree there was no gross, demonstrable paralysis. The symptoms (sore throat and difficulty in swallowing) and physical findings referable to the nose, throat, and larynx were found in almost every instance in patients examined by the author.

Laboratory findings aided only in establishing that there was diphtheria present in the vicinity as of 9 October and thereafter treatment by antitoxin and antibiotics (penicillin and streptomycin) was carried out as indicated by physical findings. During the October wave, according to clinical records, six patients had positive cultures and were given antitoxin. One woman, after receiving 10,000 units of antitoxin, died 3 days after admission. Two white men (ages 54 and 40) were admitted with positive cultures, but without symptoms or findings. They were each given 10,000 units of antitoxin and discharged. Two male Eskimos (ages 40 and 7) were admitted and although positive cultures were not obtained they were given 10,000 units of antitoxin. They improved clinically and were discharged on recovery.

The wave occurring in late November and early December varied from the one in October because positive cultures could

not be obtained or identified at the laboratory in Bethel in spite of the fact that clinically the patients appeared identical. Twenty-seven patients were admitted to the Bethel hospital between 20 November and 6 December 1952 with suspected diphtheria. There were six deaths in this group; five were confirmed by laboratory and postmortem examinations. The numbers were equally divided as to sex and ages ranged from 18 to 59 years. One woman had been hospitalized previously and treated with antitoxin. Two patients had other complicating factors of tuberculous pneumonia and toxemia of pregnancy. Three other patients had diphtheria which was diagnosed during the first wave.

There were 19 patients admitted with pharyngitis and difficulties in swallowing of varying degrees. Examination revealed only the usual beefy throat and dry crusty nasal fossae. Cultures failed to reveal *C. diphtheriae*. None of this group appeared acutely ill or remained in the hospital over five days. All were given adequate doses of antitoxin (90,000 to 150,000 units) and none had subsequent complications.

Thorough mirror visualization of the nasopharynx, hypopharynx, and larynx failed to uncover a diphtheritic membrane except in a native youth, age 18, with a fulminating tuberculous pneumonitis. Another tonsillar membrane which was observed proved to be caused by pneumococci. A postmortem examination of the trachea in a 20-year-old man revealed a membrane which was clinically and microscopically diphtheritic in type. Nose and throat cultures from this patient previously failed to show the organisms although he was observed to have had a pharyngeal membrane on admission.

Ocular paralysis apparently occurred in 6 of the 31 patients in this series. Only one of this group died. Two patients had paresis of the ciliary muscle, one had marked ptosis of the upper lid, and all complained of blurring of vision. A follow-up study was not done on any of the patients with ocular symptoms.

COMMENT

Despite the severity of the disease only four patients were recorded as acutely ill with the exception of those who died. The absence of, or failure to observe, diphtheritic membranes in the majority of patients suggests the possibility of their occurrence in the paranasal sinuses. This involvement accounts for many cases of so-called "walking diphtheria" in which the patients have only the symptoms of an acute sinusitis until the onset of neuritic or toxic complications.

No obstructive lesions were observed in the patients involved in this outbreak. The absence of patients in the age

group of 0 to 5 years gives added substantiation to the efficacy of immunization in infancy. Diphtheria antitoxin was used in a dose of 10,000 units. Penicillin, streptomycin, and aureomycin were also given.

SUMMARY

In a group of Alaskan villages with a population of about 6,000, diphtheria was diagnosed in more than 100 patients during an outbreak which occurred in two waves in October, November, and December 1952. There were eight deaths reported among adults.

During the reign of James IV there was born in Scotland a set of united twins, or "Siamese" twins as we now sometimes call them (after the famous Siamese couple who were born in 1811 and lived for 63 years). The King took a keen interest in the "monster," which had two heads and two bodies, "but from the Waste down, there was but one personage." King James caused "them" to be taught to sing in two parts, "the one the Treble, and the other the Tenor, which was very sweet and melodious to hear." They also learned to speak a number of different languages, and lived to the age of 28 years.

—DOUGLAS GUTHRIE, M. D.,
in *British Medical Journal*

Opium (a-fyun) was introduced into China from Arabia or Iran, perhaps as early as the Sung dynasty (900-1200 A. D.). It is entirely possible however that a narcotic like opium was known in prehistoric times, associated with the secret rituals of the early tribes. It is probable that initiation was accompanied in some countries with the use of drugs. Opium was undoubtedly known to the early travelers.

—EDWARD H. HUME
in *Bulletin of the New York Academy of Medicine*

POSTCHOLECYSTECTOMY SYNDROME

ROBERT T. GANTS, *Colonel, MC, USA*

RECURRENCE or persistence of symptoms following cholecystectomy is distressing to the patient and the surgeon. Such postoperative symptoms whether due to biliary duct obstruction, inflammation, or spasm, can be avoided in most patients if the proper operative procedure is confined to those in whom definite biliary tract disease is proved.[1, 2] A certain few patients will have recurrences of their symptoms, or other complaints, referable to dysfunction or disease of the biliary system no matter how correctly the operation was performed.

The persistence of symptoms following cholecystectomy is commonly referred to as postcholecystectomy syndrome, biliary dyskinesia, and biliary dyssynergia. A review of current literature indicates that cholecystectomy properly performed for cholelithiasis can be expected to relieve symptoms in as high as 95 percent of the patients, whereas cholecystectomy for cholecystitis without stones may result in 40 percent failure as far as relief of symptoms is concerned.[1, 3]

Numerous reasons for persistence of symptoms following cholecystectomy have been advanced by various authors who have reported illustrative patients successfully treated by elimination or correction of the causative factor. The most common cause for persistence or return of symptoms is an error in diagnosis and failure to recognize the presence of pancreatitis, hepatitis, peptic ulcer, diaphragmatic hernia, duodenal diverticulum, renal disease, or spinal nerve lesions.

In order to make a correct diagnosis of cholelithiasis, the patient should have a typical history of biliary colic on several occasions with more or less persistent symptoms of dyspepsia, nausea, vomiting, intolerance to fatty foods, and perhaps jaundice, associated with the detection of abdominal tenderness in the region of the gallbladder. These symptoms and findings should be corroborated by nonvisualization of the gallbladder upon repeated cholecystographic examinations or by the radiologic visualization of stones. Once a correct diagnosis of chole-

From 98th General Hospital. Col. Gants now at Walter Reed Army Hospital, Washington, D. C.

lithiasis has been made, it does not necessarily mean that conditions such as a peptic ulcer or diaphragmatic hernia do not coexist and cause some of the symptoms. Therefore, it behooves the physician to complete the differential diagnosis because occasionally a gallbladder containing stones has been removed while some other condition was the cause of symptoms. A complete physical examination is essential. Laboratory studies during an acute attack are helpful to rule out hepatitis and pancreatitis. Roentgenologic examinations of the lungs and gastrointestinal and renal tracts aid in ruling out or in making an additional diagnosis of peptic ulcer, diaphragmatic hernia, pulmonary lesions, or renal calculi.

Another cause for symptoms following cholecystectomy is the undetected or retained stone in the common bile duct. Best[3,4] gave the surgeon "an escape" for overlooking a stone in the bile duct when he called attention to hepatolithiasis. He stated that 7 percent of all patients with cholelithiasis have stones in the liver and that these may be the source of common duct stones removed at a second operation. Persistent symptoms can be due to anatomic changes such as stricture formation and possibly distortion from adhesions, occurring in the biliary tract after surgical trauma. Residual biliary tract infection has also been suggested as another cause of symptoms but is discounted by Womack and Crider.[5] Sensitivity to residual bacterial infection has been considered as a cause for persistence of symptoms after removal of an infected gallbladder.[6]

Anomalies of the sphincter of Oddi and the ampulla of Vater have been reported and discussed by Cole and Grove.[1] They reported a patient with congenital stenosis of the sphincter of Oddi who obtained relief of symptoms when it was sectioned. Another patient with a narrow opening was treated by sectioning the sphincter with questionable relief. True spasm of the sphincter of Oddi is considered to exist but the same authors considered the lesion very rare. Chronic sclerosing pancreatitis, closing the pancreatic portion of the common duct, also may cause symptoms.

Best[3] considered partial occlusion of the bile ducts with thick, viscid, or inspissated bile, collections of mucus, blood clots, debris, and fine particles of precipitated cholesterol or calcium bilirubin to be a significant factor in the recurrence of symptoms following cholecystectomy. He stated that these substances can remain in the common duct and become a nucleus for the later development of common duct stones. He also was of the opinion that spastic or atonic conditions of the choledochal sphincter play a role in the postcholecystectomy syndrome and that these conditions may be associated with bile stasis and infection.

He recommended the production of a thin, watery bile following cholecystectomy. This can be produced by the administration of decholin (dehydrocholic acid) which is a choleretic and a hydrocholeretic drug. This drug can be administered as a part of a "flush" which he prescribed for the seventh and fourteenth postoperative days.

Womack and Crider,[5] and more recently Troppoli and Cella,[7] have established the fact that neuroma formation secondary to trauma is a definite factor in the cause of symptoms following cholecystectomy. The former have explained the neuroanatomy of this region. They recognized that the cystic duct stump and the reformed gallbladder were causative agents but believed that associated neuroma which was produced by trauma was more important. This belief was based on anatomic, histologic, and pathologic findings and on the observation of patients with a reformed gallbladder or persistent stump who had symptoms regardless of the presence of stones. They contended that the development of pain several months after cholecystectomy, rather than immediately after operation, supported their view of neuroma formation. Most surgeons prefer to leave a small cystic duct stump rather than to endanger the common duct by excising the cystic duct flush at its junction with the common duct. It has been suggested that the possibility of neuroma formation is diminished by completely stripping the ductal structure of nerve elements in this area and that the surgeon can then safely leave a small cystic duct stump.

CASE REPORTS

Case 1. A 27-year-old woman was admitted to this hospital because of a severe pain in the epigastric region radiating to the left and right upper abdominal quadrants. The pain originated as a severe heartburn 5 hours prior to admission and was accompanied by nausea. Symptoms referable to gallbladder disease began when she became pregnant, 1 year prior to this hospitalization. They persisted during pregnancy and became progressively worse after delivery of her baby.

The patient was moderately obese and had exquisite epigastric and upper right abdominal tenderness. A cholecystogram revealed a functioning gallbladder with many nonopaque biliary calculi. All other studies were normal.

A cholecystectomy was performed without technical difficulty. The patient's postoperative course was complicated by an attack of upper right quadrant and epigastric abdominal pain on the sixth postoperative day which disappeared after vomiting. She described the pain as "just like my gallbladder attack." She was discharged from the hospital on the tenth postoperative day.

On the sixteenth postoperative day, the patient was readmitted because of severe epigastric and upper right quadrant abdominal pain which followed a large and fatty meal. She had vomited twice. Only upper right abdominal tenderness was detected. Intestinal obstruction, jaundice, and hepatitis were ruled out. A biliary flush was well tolerated by the patient and she has had no more attacks or other symptoms referable to the biliary tract during a 6-month follow-up though she has persisted in dietary indiscretions.

Case 2. A 46-year-old woman was admitted to this hospital because of recurrent attacks of right upper quadrant and epigastric abdominal pain which began about 8 years prior to admission. These attacks were mild at first and lasted for only a few minutes. Recently they had become more severe and frequent and the patient was ill for 4 days with the most recent one. She described the attacks as exactly like those she experienced before she had a cholecystectomy and choledochotomy 13 years prior to this hospitalization. (An attempt to secure the operative and pathologic reports concerning that surgical procedure was unsuccessful.) The patient stated that she was jaundiced prior to removal of the gallbladder, that it had contained many stones, and that bile had been drained through a tube in her upper abdomen for months afterward. She stated that jaundice had accompanied her most recent attacks but it was transitory. The use of alcohol was denied but she admitted dietary indiscretion and intolerance to fatty foods which often precipitated biliary colic.

Examination revealed an obese, middle-aged woman dehydrated and in considerable distress. Her blood pressure was 134/94; temperature, 99.8° F.; and pulse rate 92. Upper abdominal rigidity and tenderness was marked on her right side. The white blood cell count was 20,000 per cu. mm. with 90 percent polymorphonuclear cells. The sedimentation rate was 32 mm. The serum amylase test revealed 337 units. The icteric index was 29. The urine was normal and free of bile. A diagnosis of acute pancreatitis was made and the patient was treated conservatively. Within 24 hours she was greatly improved and subsequent laboratory studies were normal.

Five weeks after the original admission an exploratory laparotomy was performed. The gallbladder had been removed surgically. The liver and pancreas were normal to palpation and inspection. The common bile duct, isolated after separating many fibrous adhesions, had attached to it the old cystic duct stump which had formed another gallbladder. It measured 3 cm. in length and from 0.8 to 1.2 cm. in diameter (fig. 1), and was free of stones. It was amputated flush with the common duct after the common and hepatic ducts had been irrigated and explored

with catheters and Bakes dilators. These ducts were normal in size, consistency, and contents. A long-armed T-tube was inserted so that one limb extended into the duodenum. The appendix was removed and the abdominal incision was closed with the T-tube protruding through a separate stab wound.

Figure 1. Cystic duct stump or "reformed gallbladder."

The pathologic report was chronic nonspecific inflammation without evidence of neuroma. The patient's postoperative course was uneventful. She was discharged on the tenth postoperative day. The T-tube was removed on the ninetieth postoperative day. A biliary sinus persisted for only 24 hours. Cholangiograms prior to removal of the tube were normal. Since the operation she has been free of symptoms referable to the biliary tract and pancreas.

SUMMARY

Two patients illustrative of the postcholecystectomy syndrome have been presented with a review of recent literature on the subject, and a discussion of its cause, prevention, and management. One patient with mild symptoms illustrated the causative factor of spastic or atonic choledochal sphincter associated with bile stasis, and was successfully treated by conservative means. The second patient had a "reformed gallbladder" which required surgical excision, duct exploration, and T-tube drainage. In performing cholecystectomies, it is my policy to completely strip the cystic duct of all its adjacent structures down to its junction with the common duct. I believe that this technic has prevented recurrence of symptoms following removal of the gallbladder.

REFERENCES

1. Cole, W. H., and Grove, W. J.: Persistence of symptoms following cholecystectomy with special reference to anomalies of ampulla of Vater. *Ann. Surg.* 136: 73-82, July 1952.

2. Gants, R. T., and Wilson, J. M., Jr.: Surgical treatment of biliary tract disease; review of 100 cases treated at 98th General Hospital. *Med. Bull. U. S. Army, Europe* 9: 409-412, Oct. 1952.

3. Best, R. R.: Quantitative and qualitative control of bile flow and its relation to biliary tract surgery. *Ann. Surg.* 128: 348-362, Sept. 1948.

4. Best, R. R.: Incidence of liver stones associated with cholelithiasis and its clinical significance. *Surg., Gynec. & Obst.* 78: 425-428, Apr. 1944.

5. Womack, N. A., and Crider, R. L.: Persistence of symptoms following cholecystectomy. *Ann. Surg.* 126: 31-35, July 1947.

6. Jennings, W. K.; Ortega, M. S.; and Braslow, L.: Relationship of postcholecystectomy disturbances to bacterial sensitivity. *Surg., Gynec. & Obst.* 95: 439-445, Oct. 1952.

7. Troppoli, D. V., and Cella, L. J., Jr.: Postcholecystectomy syndrome. *Ann. Surg.* 137: 250-254, Feb. 1953.

The subject of cardiac resuscitation is of great importance because delay of only a few minutes in beginning treatment may make the difference between a dead or disabled patient and a living and well one. It is important to have a predetermined plan of action and to have equipment available in order to avoid delay. Cardiac arrest or ventricular fibrillation may occur during any surgical procedure, even in a tonsillectomy with the patient under local anesthesia. It can occur during bronchoscopy or esophagoscopy; hence, anyone who performs major or minor surgery or anesthesia must be familiar with the technic of cardiac resuscitation. The cardiologist or internist who performs catheterization of the heart not only should be aware of the possibility that cardiac arrest or ventricular fibrillation may develop during the procedure but also must be prepared to treat it, since there is usually no time to call someone else to resuscitate the patient.

—SANFORD E. LEEDS, M. D.
in the *Journal of the American Medical Association*

Scientific Translations Center Established

The National Science Foundation now has facilities in the Scientific Translations Center, Science Division, Library of Congress, Washington, D. C., for holding and photoduplicating foreign scientific translations. Initially, major emphasis will be on those from Russian scientific journals. Photostats or enlarged microprints (1 to 10 pages) may be purchased for $1.25; those of 11 to 15 pages, $1.75; and microfilms (1 to 50 pages), $1.

A PREVENTIVE DENTISTRY PROGRAM

The U. S. Air Force Plan

KENNETH R. ELWELL, *Lieutenant Colonel, USAF (DC)*

CAN an effective program be developed to prevent and reduce oral diseases among military personnel?

The U. S. Air Force's Preventive Dentistry Program is designed to do this and to complement the oral rehabilitation services by modern treatment. It is planned to provide an annual oral prophylaxis for each military person and to educate and interest all Air Force personnel in developing effective daily oral health habits such as correct, routine brushing of teeth after each meal and reducing carbohydrate intake.

Such a program is important to the military services because most inductees are in the age group having the highest rate of dental decay and nearly every recruit is in need of numerous fillings, full or partial dentures, periodontal treatment, and/or removal of infected teeth. The Government bears the heavy costs of maintaining dental clinics, equipment, and professional staffs, as well as tremendous losses in military productivity of patients undergoing treatment.

RESPONSIBILITIES AT VARIOUS ORGANIZATIONAL LEVELS

The current Air Force plan of an intensified preventive program was announced in a publication[1] by the Dental Services, Office of the Surgeon General, Headquarters, U. S. Air Force, which recommended a recent plan[2] established by a major Air Force command to improve oral hygiene practices and oral health education at its bases.

The program imposes definite responsibilities on commanders at all organizational levels. They are expected to organize and monitor programs which fulfill the objectives; provide the necessary space, personnel, and equipment authorizations; plan the training of personnel essential to the program; and give assistance in its development.

From the Office of Assistant for Dental Services, Office of the Surgeon General, Headquarters, U. S. Air Force, Washington, D. C.

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The base dental surgeon actually establishes the program. He analyzes the local situation, appoints a qualified preventive dental officer, and supervises his activities.

The preventive dental officer, usually a periodontist, is the key to an effective program. He is a highly competent officer, selected to develop the preventive program of the air base. He has dual responsibilities. First, he performs professional duties. Inasmuch as the annual dental prophylaxis[3] is one of the goals of the present program, the preventive dental officer supervises the accomplishment of this service in the dental clinic. Second, he promotes, co-ordinates, and develops all phases of oral-health education. This instruction involves the principles and methods for achieving good oral hygiene, dental benefits incident to reducing carbohydrate intake, and a practical knowledge of dental health designed to gain the co-operation of the individual in better care of his mouth. Oral-health reading material in reception rooms and printed instruction sheets[4] on special dental subjects aid the local program. Other means of promoting local programs, such as integration of the dental with the local information and educational programs and co-ordination of activities with base preventive medical officers, are used by alert dental preventive officers.

PROGRESS MADE

What progress has been achieved in the clinical prophylaxis and oral educational phases of the program? Despite large increases in Air Force strength from 1951, a steady proportional increase in the number of prophylaxis has been accomplished. Much of the progress achieved in the past fiscal year is a direct result of the planning and training accomplished from 1950 to 1952. Figure 1 shows the progressive development of the oral prophylaxis ratio from 1.7 percent in May 1951 to 2.8 percent in May 1952, and to 4.3 percent in May 1953. Calculations of percentages are based on current Air Force strength in each month indicated. Continued progress and expansion of the oral prophylaxis service at each base to a monthly ratio of about nine percent is needed to provide an annual oral prophylaxis for all Air Force personnel.[4]

The oral-health educational phase of the program has been progressing well. Good results can be expected when active and interested officers are given specific responsibility for the success of such a special program. Letters and reports from air bases which have carried out this educational phase of the program indicate that it is resulting in reduction of sugar intake, better daily hygiene habits, and an increased interest of airmen in their oral health. The results in terms of oral-disease prevention must be determined after the program has been fully developed at more air bases.

Obstacles remain which require planning and action at various administrative levels. Some bases have limited facilities and equipment, personnel may be inadequate in numbers or in training, or there may be other problems.

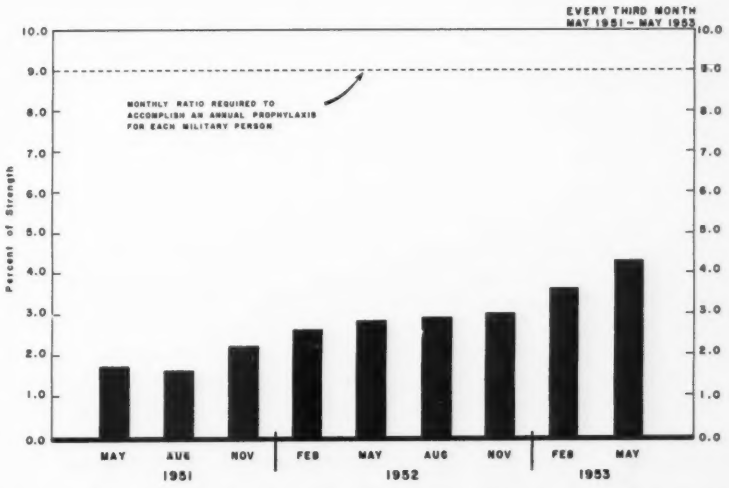

Figure 1. Percent of U. S. Air Force military strength receiving clinical oral prophylaxis.

FUTURE PREVENTIVE MEASURES AND RESEARCH

The future offers much promise for more effective prevention and/or control of oral diseases through measures other than oral hygiene. The possibilities include the use of ingested or topically applied fluorides, further developments of antibiotics, and scientific or research advances in dental treatment.

Fluoridation seems to offer the greatest potentialities in preventive dentistry. Its status is of significant interest because fluoridation of public water supplies is now an accepted public health method for partial control of caries.[5] Official figures from the U. S. Public Health Service which show that fluoridated community waters, as of 15 July 1953, now supply 790 communities serving 14,486,799 residents; also, 15,650,000 other residents of 370 other communities have approved fluoridation of their public water supplies although actual fluoridation has not been started.

Military services have delayed fluoridation of their water supplies. This policy has been based on recommendations of the National Research Council[7,8] which has recognized the positive benefits of fluoridation for children and has stated that some

evidence[9] evaluated indicates a measure of protection for adult teeth. However, it was recommended by the National Research Council that fluoridation of military base water supplies should be delayed until more evidence as to its benefits for those of military age groups is developed. Although some additional evidence has been obtained,[9,10] it has not been considered adequate to change the military policies concerning fluoridation. However, military policy on the matter is now being reconsidered on the basis of pertinent research findings. Studies of the effects of topical applications of fluoride solutions to teeth of young adults are in progress.[11] Evaluation of results as they pertain to military personnel will follow in 1954 when these studies are completed.

As new and more effective means for combating oral diseases in the military services are developed, they will be incorporated into the preventive dentistry program. Every effort will be made to continue development of a progressive and effective program in the United States Air Force.

SUMMARY

A preventive dentistry program which complements and supports the oral rehabilitation services in the prevention and reduction of military dental needs has been established in the Air Force. It is planned to provide a minimum of one annual oral prophylaxis for each military person and to educate and promote the personal interest of airmen in good, daily, oral health practices. Responsibility for developing the program is placed at various organizational levels. Despite an increase in Air Force strength, the oral prophylaxis ratio increased from 1.7 percent in May 1951 to 2.8 percent in May 1952, and to 4.3 percent in May 1953. Reports from air bases indicate that the educational phase of the program is progressing with favorable results.

Fluoridation of military water supplies is now under reconsideration; recent research findings will be evaluated concerning possible benefits to those served by military communal water supplies. Future preventive methods and research results which prove effective in controlling the incidence of oral diseases will be used to insure progressive development of this program.

REFERENCES

1. Preventive dentristry. *Dental News Bulletin,* Office of the Surgeon General, Hq USAF, 5-6 Oct. 1952.

2. Preventive dental program. *Dental News Letter,* Office of the Air Surgeon, Hq SAC, 2-3 July 1952.

3. Dental prophylaxis program. *Dental News Bulletin,* Office of the Surgeon General, Hq USAF, 1 June 1953.

4. Preventive dentistry. *Dental News Bulletin,* Office of the Surgeon General, Hq USAF, 3 Feb. 1953.

5. Dean, H. T.: Some reflections on epidemiology of fluorine and dental health. *Am. J. Pub. Health* 43: 704, June 1953.

6. Hagan, T. L.: Personal communication concerning statistical data from the Division of Dental Public Health, BSS, U. S. Public Health Service, Dept. Health Education and Welfare, 27 July 1953.

7. Division of Medical Sciences, National Research Council: Report, Subcommittee on Caries, Committee on Dentistry, Washington, D. C., Mar. 5, 1951.

8. Division of Medical Sciences, National Research Council: Report of Ad Hoc Committee on Fluoridation of Water Supplies, Washington, D. C., Nov. 1951.

9. Russell, A. L., and Elvove, E.: Domestic water and dental caries; study of fluoride-dental caries relationship in adult population. *Pub. Health Rep.* 66: 1389-1401, Oct. 26, 1951.

10. Arnold, F. A., Jr.; Dean, H. T.; and Knutzon, J. W.: Effect of fluoridated public water supplies on dental caries prevalence. *Pub. Health Rep.* 68: 141-148, Feb. 1953.

11. Becks, H.: Personal communication concerning sodium fluoride studies of young adults, University of California, Dec. 1952.

Maternal mortality rates have gradually been reduced to satisfactory levels, but stillbirth and neonatal death rates have failed to decline commensurately. Recent statistics * * * show a decided relative increase in infant deaths during the first 24 hours of life. The combined stillbirth and neonatal mortality rate in the United States is 5 percent, and represents a loss of over 150,000 lives annually. In 1949, one out of 20 pregnant women failed to produce a living child.

—HUBERT L. ALLEN, M. D.
in the *Illinois Medical Journal*

As a class, physicians are inclined to be individualistic, with an abundance of self-confidence in their ability and knowledge. It is the presence of these innate characteristics which has led most of us into the practice of medicine, and their proper use is responsible for much of the good we accomplish in our chosen tasks. In order that we might reap the full benefits from a life of service, it is essential that we accept the same standards of behavior which we have set for the patients under our care.

—JAMES S. KLUMPP, M. D.
in the *West Virginia Medical Journal*

ARMY PREVENTIVE MEDICINE TECHNICIANS

Their Schooling and Background

JOHN D. FLINTJER, *Major, MSC, USA*

THE majority of the preventive medicine technicians (MOS 1119) in the Army have attended the Preventive Medicine Enlisted Course 8-E-20, at this school. A number of technicians earned their MOS by dint of hard work in the field and later some of these have attended school. They almost invariably benefited from the formal training.

The purpose of the course is "to train selected enlisted personnel in the basic principles and technics of military preventive medicine in order to qualify them to assist in the survey and control of environmental health hazards." The program of instruction is summarized in table 1.

This 12-week course is divided into three parts: entomology, sanitary engineering, and general sanitation subjects. No attempt is made to produce specialists in these separate fields. The fundamental purpose of the instruction is to develop a man who will quickly and readily fit into sanitation work with minimal on-the-job training. The course is conducted by lectures (50 percent), laboratory exercises (20 percent), and field applications (30 percent).

ENTOMOLOGY

In entomology the stress is on the identification of medically important arthropods and their hosts, particularly rodents, but other related arthropods (which are of economic importance) are emphasized enough to prevent a distorted outlook. The students then learn the properties, effectiveness, use, and dispersal of insecticides and other control measures. Simple identification keys are used because most of the students lack basic scientific training. Ordinarily, technicians in their work are required only to identify genera, but because mosquitoes and fleas are so important in the spread of disease, their species identification is taught. The laboratory lessons include detailed study of microscopic and macroscopic specimens and familarize the student

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with the microscope and enable him to identify important insects. They learn to handle the same laboratory equipment that they will use in the field. They are shown how to collect, prepare, and properly pack specimens for shipment. They learn that their work is not the end-all of epidemiology, but only the first step in a total investigation. All of the laboratory work is closely correlated with lectures and field instruction (fig. 1).

TABLE 1. *Preventive medicine procedures course*

(12 weeks, 528 hours)

Subject	Hours	
Reserved for commandant		67
Technical instruction		381
General instruction	(26)	
Military preventive medicine	(11)	
Microbiology	(12)	
Control of respiratory diseases	(3)	
Insect and rodent-borne diseases	(16)	
Insect and rodent control	(95)	
Intestinal diseases	(12)	
Mess sanitation	(24)	
Venereal diseases	(6)	
Prevention and control of miscellaneous diseases	(3)	
Water supply and purification	(76)	
Waste disposal	(34)	
Housing	(6)	
Industrial hygiene	(9)	
Preventive medicine statistical reports and regulations	(6)	
Miscellaneous preventive medicine	(21)	
Map reading	(13)	
Veterinary corps food inspection	(8)	
Nontechnical instruction		80
Troop information and education	(11)	
Inspections	(22)	
Drill	(11)	
Physical training	(36)	
Total hours		528

The technicians learn to associate vectors with diseases. Only enough instruction about the clinical aspects of disease is furnished to give them a general impression of the nature of the conditions. Etiology is covered with sufficient emphasis to develop ecologic understanding. The epidemiology of disease is comprehensively considered because these technicians will be concerned not only with disease prevention, but also with tracking down the sources of infection. Their job is to recognize and control the environmental factors of disease transmission.

Entomology field exercises include surveys for insects and rodents, demonstrations, and inspections, with the main emphasis on the control procedures. For instance, the men take counting grids into fly-infested areas and learn to estimate the fly population. At the same time, they learn why the flies are present and what can be done to eliminate them. The same is true when they search for mosquito breeding places. While collecting specimens, they acquire a knowledge of the habitats and habits of ticks and mites with the aim of developing control measures. When the men go into a tick-infested area, they learn by practice to impregnate clothing with repellents. In aerial dispersal of insecticides,

Figure 1. Students making survey for mosquitoes. A cool, shady culvert provides mosquitoes with a good resting place.

the students are shown how to use special equipment and how to direct the pilot by ground-control flags and markers. The students are taught to prepare insecticides and repellents and the relative effectiveness of each. They use the control equipment most suitable for each preparation while studying the methods of application. They see examples of DDT-resistance, demonstrated with live cultures of especially reared flies. The students make rodent surveys, learn to recognize signs of rodent infestations, how to trap rodents, and comb them for ectoparasites, which they subsequently study and identify in the laboratory. The tech-

nicians study the morphology, life cycles, and habits of the arthropods as related to their control. With a little supervision, most of the graduates can give real assistance in the epidemiologic investigation of arthropod-borne diseases.

SANITARY ENGINEERING

Instruction in sanitary engineering acquaints the students with methods and problems of water supply and purification and disposal of sewage and other wastes. To give them a well-rounded outlook, they study expedient field disposal methods and the integrated sanitary systems servicing communities.

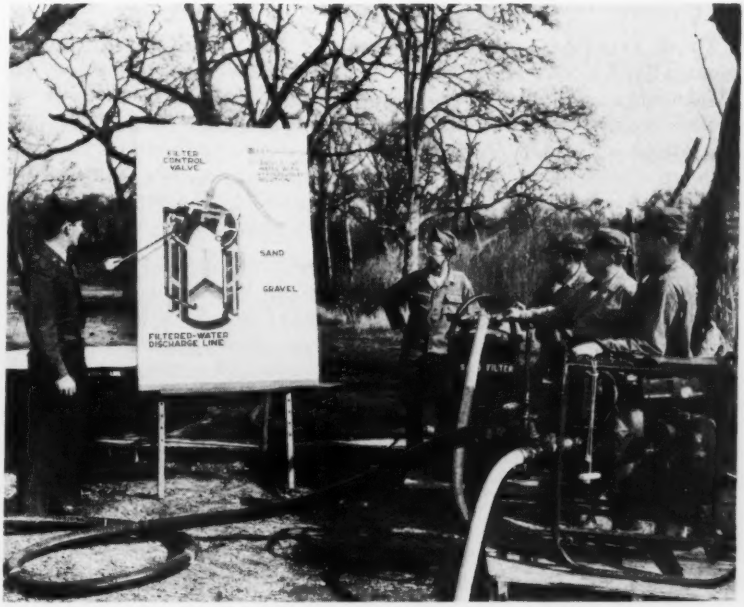

Figure 2. Students receiving instruction in pressure sand filtration used in water treatment in the field.

Specifically, the students first study the elementary chemistry of water. They consider the favorable and unfavorable elements and compounds dissolved in various waters. In the laboratory they determine the chlorine demand, chlorides, and hardness of water. They then study the biologic contaminants of water. With samples which they collect and label, actual bacteriologic analyses are made and demonstrated. From the results of the chemical and biologic analyses they determine the potability of the water. Surveys to determine the location and suitability of water sources are made on field trips. In preparation for this training, basic

water mathematics (such as measurement of streams and stream flow to determine the quantity of water available) are taught.

The study of sewage and sewage systems is the next step. Initially, the technicians learn the important facts about sewage; its character, composition, and health significance. At this time, the study of intestinal diseases and their control is introduced. They learn that sewer and water pipes may be laid in the same channels; hence they must know how to look for leaks, seepage, and possible water contamination. They study cross-connections, learning what they are, where to look for them, and how to recognize and correct them. The effluents and the necessity for their treatment in regard to stream pollution, stream management, and the problems encountered in this connection are studied.

There is extensive demonstration of field sanitation methods, especially for the treatment of wastes. Method of operation and construction of such apparatus as the inclined-plane incinerator, immersion heaters, and other equipment and the proper disposal of garbage and trash are included. The proper methods of handling garbage cans and racks at mess halls, bakeries, and meat-cutting plants are demonstrated. The operation and limitations of a sanitary fill and a large incinerator are observed.

Sanitary engineering instruction includes a study of pumps, pipes, tanks, and some of the operational problems that can develop in their use and enables the technicians to assist a preventive medicine officer competently in the inspection of various sanitary installations. During their instruction they are taught to operate an engineer water point. In an emergency, each technician could operate such a point for field troops or to replace disrupted post or civilian supply systems (fig. 2).

GENERAL SANITATION

The third phase of the course covers sanitation in general. The technicians are schooled in the nature and epidemiology of diseases (such as venereal and respiratory) that are not arthropod-borne. They make field trips in which multiple phases of sanitation and hygiene are integrated. Emphasis is placed on the correlation of various subjects which they have studied. Previous teaching is summarized, and conclusions are drawn by demonstrations and applicatory exercises.

The instruction in microbiology covers the morphologic and cultural characteristics of bacteria, an introduction to pathogenic micro-organisms, infection and resistance, and immunology. The information is elementary, but designed to provide enough basic understanding to give meaning to the other training.

Because preventive medicine technicians may be employed in some phases of venereal disease control, they are given basic

instruction in the clinical aspects, symptomatology, etiology, and general epidemiology and control of the venereal diseases.

The etiology, symptomatology, and epidemiology of respiratory diseases are discussed and the transmission of them is correlated with housing and ventilation.

The hygiene of food handlers and their inspection, along with mess sanitation and inspection are intensively studied. In mess inspections, the technicians are taught not only the sanitary aspects, but also the personnel relations aspects involved because they generally work in a supervisory and advisory position. The distinction between supervisory and command prerogatives are instilled.

The students are taken on field trips with sanitarians from the San Antonio Public Health Department. These sanitarians demonstrate the inspection, operation, and sanitation of meat-processing plants, dairies, bottling works, restaurants, barber and beauty shops, and trailer camps. The technicians are shown problem housing areas and some of the corrective measures employed in these areas. They also study an area where there is a drainage problem, see the conditions involved, and learn what can be done to improve such situations.

During the general sanitation phase of the course, the main objective of instruction is to integrate prior and current knowledge. The men are shown by the study of disasters that disruption of sanitary facilities increases epidemic disease, creates insect- and rodent-control problems, and causes overcrowding in houses, which results in the spread of respiratory diseases.

PREREQUISITES

The present 12-week course was instituted in May 1950. The students who are accepted for training must have finished basic training, have a least a year to serve on completion of the course, and be below grade E-5. An AGCT score of 100 or better in area III is a prerequisite. Prior experience or an interest in sanitation is desirable. Between May 1950 and January 1953, admissions to the course numbered 1,112. Of these 918 graduated. This attrition rate of 13.2 percent is largely accounted for by losses due to academic deficiency. The educational background of the graduates of this course by percentage is as follows: College graduates, 8; high school graduates with some college, 27; high school graduates, 41; grade school graduates with some high school, 19; grade school graduates, 2.5; and incomplete grade school, 2.5. The average class was composed of 50 students. Currently (1953), the authorized class size has been reduced to 40 students, a size which enables each man to receive an adequate amount of individual attention.

CLASSIFICATION AND ASSIGNMENT

When the students have completed this course, they are classified as Preventive Medicine Technicians, MOS 1119, semiskilled. They are not yet qualified sanitarians but are well fitted for an apprenticeship which need not be long. If on-the-job training in their first assignment is good, most of them will become first-rate, skilled, preventive medicine technicians.

These technicians may be used in Preventive Medicine Survey and Control Detachments (T/O & E 8-500, LA and LB teams) and in Preventive Medicine Companies (T/O & E 8-117), either in oversea or Army area commands. Preventive medicine officers in various headquarters need enlisted assistants; these preventive medicine technicians are trained to fill those jobs. They have proved useful in such organizations as Army area laboratories and medical general laboratories. In some assignments they have been called upon to assist in venereal disease control, especially in contact tracing.

These men have an understanding of the effect of environment on health and know how adversely an unfavorable one may affect military operations. They have learned something of environmental control for better public health. They have a basic foundation and are potentially able to learn much more with proper supervision.

Land-Mine Injuries

In the treatment of land-mine tattoos during World War II an interesting observation was made. After abrasion of the face skin had been carried to the maximum within limits of safety, there usually remained a variable number of small isolated deposits in the subcutaneous tissues. By piercing these spots with a skin hook and making traction upward, they were easily removed by minute elliptical incisions and the edges approximated by one or two fine sutures. The resulting scars were rarely visible even on close examination. If, by comparison, the deposits were excised through the intact skin without abrading the epidermis, the usual scarring developed.

—P. C. IVERSON, M. D.
in *Plastic and Reconstructive Surgery*

REVERSIBLE RENAL INSUFFICIENCY

Report of a Case

BERNARD BLOOM, *M. D.*

GEORGE ALVARY, *Lieutenant Colonel, USAF (MC)*

RENAL insufficiency, due to remediable types of renal or lower urinary tract disease, occurs frequently enough for the condition to be suspected in every patient manifesting this syndrome. Thorn[1] suggests the following remediable types of chronic uremia: (1) urinary retention secondary to obstruction; (2) chronic parathyroidism with renal calculosis; (3) chronic pyelonephritis without hypertension; (4) "salt-losing" type of chronic nephritis; (5) intoxication with irradiated sterols; and (6) subacute bacterial endocarditis.

We are primarily interested in the first group. Obstructive lesions may be located supravesically or intravesically, the end result being uremia in each instance. The improvement of uremic patients with obstructive lesions depends upon the reversibility of the renal damage in the functioning parenchyma which remains. Therefore, the sooner treatment is instituted the better the outlook.

Other important factors are the degree of relief of chronic obstruction attainable and, in most cases, the effectiveness of modern chemotherapy in reducing the associated urinary tract infection. In patients with long standing obstructions and organic damage to the urinary channels, the newer drugs have made corrective surgery safer. The patient illustrates the relief of uremia by correction of an obstructive lesion that had been asymptomatic and unsuspected for many years.

CASE REPORT

A 20-year-old man was admitted to the hospital on 5 January 1951, with the chief complaint of dull aching pain in the right lower abdominal quadrant and right lumbar region of 6 hours' duration and increased frequency of urination of 10 days' duration. The provisional diagnosis on admission was acute right pyelonephritis. On the day of admission he voided hourly and complained of burning. There was no history of chills, fever, or gross hematuria. Prior to the onset of urinary frequency, the pa-

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tient had considered himself in good health and had been able to perform all duties. The past and family histories are noncontributory.

Physical examination revealed a markedly undernourished and dehydrated young man who was lethargic and appeared chronically ill. His temperature was 100° F.; pulse, 90; and blood pressure, 170/120. The abdomen revealed moderate tenderness to deep palpation in the right lower quadrant, although there was no muscle spasm or rebound tenderness present. Moderate tenderness was present over the right costovertebral region.

On admission the following laboratory test values were obtained: red blood cell count, 2,450,000; leukocytes, 12,000; urine, loaded with white blood cells; culture positive for nonhemolytic staphylococcus. The nonprotein nitrogen, 133 mg. The phenolsulfonphthalein test revealed no excretion in 2 hours. Urine concentration was fixed at 1.010 specific gravity. On 26 January, 3 weeks after admission, the nonprotein nitrogen was 200 mg. After several weeks of catheter drainage, the nonprotein nitrogen was 65 mg. on 9 February. On 16 March, 2 weeks after transurethral resection, the nonprotein nitrogen was 48 mg.; on 18 April, 48 mg. The urine remained infected throughout his hospital stay.

Following admission, the patient was given sulfadiazine and, later, streptomycin. After 3 weeks of antibacterial therapy, he was seen in urologic consultation with the request for retrograde pyelograms since intravenous pyelography failed to reveal discernible dye in the urinary tract in films taken at 5-, 15-, 25-, 45-, and 60-minute intervals. At this time the blood pressure was 200/120 and the nonprotein nitrogen was 200 mg. per 100 cc. The patient had been considered as having chronic glomerulonephritis with severe hypertension. The presence of pyuria, unilateral flank pain, frequency, and fever, however, suggested that a urologic factor might be responsible for the entire syndrome of renal insufficiency and its consequences. Because his right side had been symptomatic, a right-sided pyelogram was first done. A No. 21 French Brown-Buerger cystoscope was passed with ease, and 900 cc. of hazy residual urine was obtained. The bladder wall showed coarse trabeculations, grade II, and on the right floor a diverticular orifice was present. Both ureteral orifices appeared to be of normal size, shape, appearance, and location. The bladder mucosa revealed chronic inflammatory changes throughout. A No. 6 French ureteral catheter was passed up the right ureter to 26 cm. without meeting obstruction. There was a constant flow of hazy urine from the ureteral catheter. Over 50 cc. of this urine could be aspirated. Roentgenograms revealed the ureteral catheter lying in a coiled position in the region of the

lower ureter with its tip extending to the level of the second lumbar vertebra. Retrograde pyeloureterograms revealed an extreme degree (grade IV) of hydro-ureter and moderately severe hydronephrosis (fig. 1). The filled ureter resembled a coil of small bowel. The lowest extent of the ureter ended abruptly in a smooth manner at the ureterovesical level. The ureteral catheter was removed and an indwelling No. 18 French Foley catheter placed in the bladder for constant drainage of the chronically distended and hypertrophied bladder. Several days later cystoscopy with left ureteropyelography revealed hydro-ureter and hydronephrosis, the hydro-ureter being considerably less than that present on the right.

After 1 month of constant urethral catheter drainage, the nonprotein nitrogen had fallen to 65 mg. per 100 cc. The anemia had improved considerably with only one blood transfusion. On 3 March, under spinal anesthesia, transurethral resection of the hypertrophied vesical neck was done. Seven days later the residual was only 30 cc.; 2 weeks postoperatively there was no residual and the nonprotein nitrogen was 48 mg. per 100 cc. Intravenous pyelography, 3 weeks postoperatively, revealed fairly good concentration within 15 minutes and some slight diminution in the degree of hydronephrosis. The patient's blood pressure had dropped to 120/80 and he had gained 20 lb., but the urine remained infected in spite of various chemotherapeutic and antibiotic agents. Except for weakness the patient was asymptomatic when he was discharged on 6 June. Five months later he was separated from the service and entered college.

COMMENT

The striking features of the findings in this patient are:

1. The gradual development of an extreme degree of bilateral hydro-ureter and hydronephrosis without symptoms, calculi, or clinical evidence of infection until the final stages of uremia.

2. The comparatively rapid return of renal function in an obstructive lesion after catheter drainage and removal of the obstruction. The return of function was greater on the side showing the higher degree of ureteral dilatation. In the tract capable of greater ureteral distention, a greater saving of kidney parenchyma has resulted.

3. The question of additional obstruction at the right ureterovesical junction due to relative obstruction from disproportion caused by extreme ureteral dilatation. However, after the patient responded well to transurethral resection of the vesical outlet and intravenous pyelograms revealed relatively good return of function on that side, no other surgical procedure was done.

Figure 1. Retrograde ureteropyelograms (A) left, (B) right.

It may be clinically impossible to make a positive differential diagnosis between Bright's disease and a urologic condition resembling glomerulonephritis when the patient is first seen in a state of renal insufficiency. Excretory urograms in chronically ill patients with a nonprotein nitrogen over 70 mg. per 100 cc. are frequently made, but they furnish little information because most of these patients have insufficient renal function remaining to excrete discernible amounts of dye. The fear that urologic instrumentation may cause serious complications in such uremic patients should not preclude full appraisal with the judicious use of the present day urologic armamentarium. Renal insufficiency due to remediable types of obstruction may remain undiagnosed. Cystoscopy will reveal obstructions in the lower urinary tract; obstructions in the upper part of the urinary tract will be detected by retrograde pyelography. Campbell[2] lists the many causes of lower urinary tract obstruction which include contracture of the vesical outlet, spastic neuromuscular disease, congenital valves of the posterior urethra, hypertrophy of the verumontanum unassociated with valves, congenital urethral stricture, and congenital meatal stenosis.

It is worth the effort to investigate the entire urinary tract in patients exhibiting renal insufficiency in whom there is even the slightest suspicion of error in the clinical diagnosis. This is especially applicable in patients scheduled to meet the Physical Evaluation Boards when a definite percent of industrial disability may be determined.

REFERENCES

1. Thorn, G. W.: Treatment of renal insufficiency. *J. Urol.* 59: 119-148, Feb. 1948.
2. Campbell, M. F.: *Clinical Pediatric Urology.* W. B. Saunders Co., Philadelphia, Pa., 1951. pp. 563-565.

There is an alarming increase in occurrence of cancer which is absolute, over and above all that is accounted for by better diagnosis and increasing older population. Cancer of the lung has tripled in occurrence during the last several decades. The biostatisticians calculate that if we all live to reach 125 years, each will be victim of some type of cancer.

—GEORGE Z. WILLIAMS, M. D.
in *Virginia Medical Monthly*

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DELAYED RUPTURE OF THE SPLEEN

Report of Three Cases

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LEWIS L. HAYNES, *Commander, MC, USN*

RUPTURE of the spleen is one of the most common closed injuries of the abdomen, being found by Mazel[1] in 30 percent of such injuries in 1932 and by Wright and Prigot[2] in 47.6 percent in 1939. The latter believe that the actual, as well as the relative, incidence is increasing as a result of more frequent and more severe automobile and airplane accidents.

Delayed rupture of the spleen, occurring in a 1:6 ratio with immediate rupture,[2,3] may be defined as one that becomes clinically evident 48 or more hours subsequent to the injury,[4] following a period of latency during which symptoms are minimal or even absent. This latent period lasts less than one week in 52 to 60 percent,[3,5] or possibly 80 percent of the patients.[5] In 20 to 25 percent,[3,5] it lasts from 7 to 14 days and occasionally is longer.[6] The subject has been well reviewed by McIndoe,[4] Bueermann,[7] and Zabinski and Harkins,[5] who collected 179 cases from the literature. Since the latter report in 1943, frequent case reports have appeared in the literature.[3,8-14]

CASE REPORTS

Three cases seen at this hospital over a one-year period are here presented. Two of these are of special interest because of the latent periods of 20 and 31 days, respectively.

Case 1. A 24-year-old man was admitted to this hospital on 14 June 1952, six days after a motorcycle accident. He had felt well until the evening following the accident when he noted sudden chest and abdominal pain for which he was admitted to his base dispensary. Examination there showed no abnormal findings except that the patient was unable to flex his body on the thighs because of abdominal pain. The next day he felt better and remained asymptomatic for four days under observation. At the end of this latent period, the patient was suddenly seized with abdominal pain accompanied by profuse sweating, pallor,

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and weakness. He had a weak, rapid, thready pulse of 96, and his blood pressure was 120/76. At that time he was transferred to this hospital.

Examination showed an acutely ill, pallid, sweaty man unable to sit up because of abdominal pain. The abdomen was splinted and distended, and a sense of fullness in the left upper quadrant was noted; it was generally tender, especially in the right upper quadrant, and peristalsis was increased. A diagnosis of ruptured spleen was made and under spinal anesthesia, supplemented by endotracheal oxygen and ether, a celiotomy was performed through a left paramedian incision. When the peritoneal cavity was opened, clotted and bright blood flowed into the wound. The spleen, which had a large tear in the phrenic margin, was removed. A total blood loss of 500 cc. was estimated. This was replaced during the operation. The spleen weighed 295 grams and measured 14 by 10½ by 5½ cm. Multiple cross sections revealed areas of hemorrhage within the parenchyma and subcapsular area and in the splenic parenchyma proper. On the thirteenth postoperative day, 325 cc. of sterile serosanguineous fluid was removed from the left chest. The patient's course in the hospital otherwise was uneventful and he was sent to full duty on 30 July.

This is a typical case of delayed splenic rupture appearing clinically six days following severe trauma to the left upper abdomen and chest. The patient apparently had asymptomatic intrasplenic rupture 36 hours following injury, which subsided clinically on bed rest. After an asymptomatic period for four days, he was stricken with typical sudden, sharp, abdominal pain accompanied by signs of shock.

Case 2. A 21-year-old man was admitted to this hospital on 8 February 1952, two days after an accident aboard his ship. A tractor which he was driving overturned, crushing his chest and upper abdomen. The patient became unconscious, cyanotic, and had emphysema and crepitation over the left seventh and eighth ribs anteriorly, with distant heart sounds. After being given oxygen, plasma, and blood, he regained consciousness, and his vital signs appeared stabilized. On admission, the examination showed a left pneumothorax with fracture of the left sixth, seventh, and eighth ribs, fracture of the left radius, and bilateral subconjunctival hemorrhages, suggestive of a superior vena cava syndrome. Tenderness in the left upper abdominal quadrant was noted at this time. An electrocardiographic tracing suggested coronary insufficiency. The patient was given supportive treatment. His electrocardiogram returned to normal, his lung re-expanded, and the subcutaneous emphysema subsided.

The patient progressed well until the twentieth day following injury, when, while receiving an enema, he complained of pain in the left upper abdominal quadrant, went rapidly into shock (blood pressure, 84/48 and pulse, 130), and was noted to be pale and clammy. Otherwise the examination was negative except for a distended, rigid abdomen with tenderness. Marked rebound tenderness was present in the left upper quadrant. A diagnosis of ruptured spleen was made and the patient was given oxygen and 1,500 cc. of blood under pressure. Under spinal anesthesia, a celiotomy was performed through a left rectus incision. On opening the peritoneum, 2,000 cc. of old and fresh blood was encountered. The spleen was found to be enlarged to about twice its normal size, and a hemorrhagic area was noted in the upper pole through a tear in the capsule. The spleen was removed and during closure of the abdomen the patient went into shock (blood pressure, 50/0; pulse, 180+). He responded to increasing the rate of intravenous blood flow, so that on arrival on the ward his blood pressure was noted to be 120/60, but this immediately fell to 50/30 with an unattainable pulse, and he died 15 minutes later.

The pathologic report following autopsy stated that death was caused by myocardial failure, due to "physiologic alterations, incidental to the original injury—apparently of such magnitude as to preclude the tolerance of the intraperitoneal hemorrhage and excessive intravenous therapy necessary during the operative period." The spleen weighed 290 grams. The external surface contained two nodular masses, and there was a laceration at one pole which extended into the parenchyma.

The prolonged latent period of 20 days following extremely severe trauma to the abdomen and chest is of interest. Throughout this period, tenderness persisted in the left upper abdominal quadrant, but was overshadowed and masked by other injuries.

Case 3. A 14-year-old boy was admitted to this hospital on 28 July 1952. Ten days previously the patient fell 45 feet from a tree and was knocked unconscious. He was admitted to the neurosurgical service of another hospital where he had steady improvement of his conscious level but remained in a stupor with movement of the left extremities only and with sucking reflex and chewing movements of the lower jaw. The patient was believed to have a severe brain stem lesion. He was transferred to this hospital unchanged. On examination, his pupils were found to be active to light. He had a paralysis of his right extremities except for some movement of the upper extremity on painful stimuli, and there was spasticity of both lower extremities and bilateral positive Babinski's signs with increased deep reflexes and absent superficial reflexes. His blood pressure was 140/80; pulse, 75; and temperature, 99° F. rectally. There

was overflow incontinence of urine. All blood studies were normal, including a red blood cell count of 4,200,000 with hemoglobin, 93 percent. On supportive therapy the patient improved slowly and on 3 August was taking food orally in small amounts, but with difficulty in chewing. He seemed alert at this time and was able to respond to vocal stimulation by eye motions.

On 18 August, 31 days following his injury, the patient was noted to be in pain, became suddenly pale, and was observed to have a distended abdomen. He was given a soapsuds enema, after which the distention diminished and his vital signs remained stable. An hour later the patient was again examined and was noted to have epigastric muscular rigidity, more marked on the right than on the left. Bowel sounds at that time were normal. On examination an hour later, bowel sounds had disappeared, the epigastrium was definitely rigid, and there was marked muscle spasm. His hemoglobin at this time was 72 percent. Surgical consultation was obtained and it was suggested that the patient had a perforated viscus, most likely a perforated Curling's ulcer in view of the head injury. The abdomen was entered through a right paramedian incision. On exposing the peritoneum it was blue and on entry 1,000 cc. of old and fresh blood poured into the wound. A large, partly organized clot was found in the left upper quadrant, the removal of which revealed active bleeding. The spleen on removal was greatly enlarged, soft, and ruptured. The patient received 1,000 cc. of blood during the operation, tolerating it well. Following this operation the patient improved slowly, and one month later was discharged to an outpatient status. He was still hemiparetic, but alert and progressively improved in his contact with surroundings. He was able to utter monosyllabic replies to questions.

The spleen measured 13 by 7½ by 4 cm. and weighed 172 grams. On the under surface there was a laceration 3½ by 2 cm. Several areas were irregular and appeared necrotic.

This case report is significant not only because of the 31-day latent period, but because of the difficulty of diagnosis arising from the lack of subjective assistance with masking of signs by concurrent injury and absence of specific history of local trauma. The ability of a patient so critically ill to withstand the additional shock of massive intraperitoneal hemorrhage and the trauma of splenectomy is remarkable.

COMMENT

Patients with splenic rupture typically present a history of an injury to the upper abdomen or lower chest. This is usually on the left side, although trauma to the right side may cause splenic rupture by *contracoup* effect. Immediate symptoms vary

from those of a mild contusion to severe pain in the left upper abdominal quadrant which may be aggravated by respiratory motions, and accompanied by weakness, faintness, and sweating. Subsequently the symptoms subside in 12 to 24 hours, although the patient may complain of soreness in the abdomen, occasionally localized in the left upper quadrant.[5,6] An examination at this time may reveal a persistent rigidity of the left rectus muscle, occasionally with deep tenderness, an increase in splenic dullness, costal breathing, slight pallor, and weakness. Fainting occasionally may occur.[6] Following a period of latency, a fairly uniform picture presents itself with the abrupt onset of severe, sharp, left upper quadrant pain accompanied by pain in the left shoulder, and shock. Examination reveals a clammy, pallid, hypotensive patient with exquisite tenderness and spasm in the left upper quadrant. A fluid wave is frequently demonstrable in the abdomen and shifting dullness may be present. A roentgenogram shows elevation of the left hemidiaphragm with tenting of its central portion.

The most frequent conditions to be differentiated from delayed rupture of the spleen are perforated peptic ulcer and rupture of the liver, kidney, or appendix. Rupture of other viscera may be confused with this condition, as may that of an aortic aneurysm. Perforation of a peptic ulcer is usually preceded by other symptoms of the disease and is in most cases associated with radiographic evidence of air beneath the diaphragm. Rupture of the liver or left kidney may not be differentiable preoperatively. All of these conditions require surgical treatment and differentiation finally rests on the operating surgeon.

SUMMARY

Delayed rupture of the spleen is a relatively common condition following abdominal injury. The nonoperative mortality of this disease approaches 100 percent;[6] the operative mortality is from 25 to 27 percent.[15] Prompt surgical intervention is the only treatment.

REFERENCES

1. Mazel, M. S.: Cited in reference 3.

2. Wright, L. T., and Prigot, A.: Traumatic subcutaneous rupture of normal spleen. *Arch. Surg.* 39: 551-576, Oct. 1939.

3. Bailey, H. A., and Schreiber, S. L.: Delayed rupture of spleen; case report. *Am. J. Surg.* 66: 4-14, Oct. 1944.

4. McIndoe, A. H.: Delayed haemorrhage following traumatic rupture of spleen. *Brit. J. Surg.* 20: 249-268, Oct. 1932.

5. Zabinski, E. J., and Harkins, H. N.: Delayed splenic rupture; clinical syndrome following trauma; report of 4 cases with analysis of 177 cases collected from literature. *Arch. Surg.* 46: 186-213, Feb. 1943.

6. Deaver, J. M.: Delayed hemorrhage following traumatic rupture of spleen—with particular reference to roentgenologic findings; case report. *Ann. Surg.* 113: 477-480, Mar. 1941.

7. Bueermann, W. H.: Latent period and delayed hemorrhage following traumatic rupture of spleen. *U. S. Nav. M. Bull.* 41: 73-93, Jan. 1943.

8. Atamian, C.; McFarlane, J.; and Blake, H. S.: Extensive rupture of spleen with delayed signs of hemorrhage. *U. S. Armed Forces M. J.* 4: 603-604, Apr. 1953.

9. Bell, H., and Steele, G. H.: Delayed rupture of spleen. *Lancet* 1: 598, May 6, 1944.

10. Gillis, L.: Delayed rupture of spleen. *Lancet* 2: 822-823, Dec. 23, 1944.

11. Kowallek, P. J.: Delayed rupture of spleen; case report. *U. S. Armed Forces Med. J.* 4: 605-606, Apr. 1953.

12. McLaughlin, E. F.: Secondary or delayed hemorrhage from ruptured spleen; case report. *Am. J. Surg.* 61: 124-125, July 1943.

13. Pollock, L. H.: Traumatic delayed rupture of spleen. *J. Missouri M. A.* 44: 654-659, Sept. 1947.

14. Santini, F. J.; Olechowski, L. W.; and Nichols, J. E.: Delayed splenic rupture; report of case. *U. S. Nav. M. Bull.* 44: 395-400, Feb. 1945.

15. Puestow, C. B.: Traumatic rupture of spleen with delayed hemorrhage. *S. Clin. North America* 20: 195-205, Feb. 1940.

Roentgenographic Interpretation

The interpretation of chest roentgenograms, like any other human activity, is subject to considerable variation. It has been demonstrated that competent and experienced physicians are likely to disagree with each other in a significant proportion of roentgenographic interpretations. These inconsistencies were found when single roentgenograms were interpreted for the presence or absence of abnormal shadows. Even greater discrepancies were demonstrated in attempts to classify single roentgenographic shadows according to character, extent, and probable "activity" of the lesion. The implications of these findings to mass case-finding programs have been discussed in a number of publications.

More recently, inconsistencies of similar magnitude were found to exist in the interpretation of serial roentgenograms. It was shown that in evaluating film pairs for evidence of progression, regression, or stability of disease, well-qualified radiologists and phthisiologists disagreed significantly with each other. Moreover, a physician did not always agree with himself in two independent interpretations of a set of serial roentgenograms. These findings are of great importance in clinical phthisiology in view of the universal employment of the procedure as an aid in the clinical management of tuberculosis patients.

—J. YERUSHALMY
in *Diseases of the Chest*

RETROCAVAL URETER

CHARLES J. VAN TASSEL, Jr., *Captain, MC, USA*

THERE were less than 58 cases of retrocaval ureter reported in the literature up to October 1952.[1,2] In this condition, also known as postcaval ureter, circumcaval ureter, or preureteric vena cava, the right ureter passes behind the inferior vena cava because of the persistence of the right posterior cardinal vein as the adult vena cava. A correct preoperative diagnosis is established only by roentgenologic studies, and satisfactory results from plastic procedures have improved in recent years. When conservative surgery is indicated, the choice of the plastic procedure must be made during the operation.

CASE REPORT

A 23-year-old man was admitted to this hospital on 5 August 1951 complaining of intermittent attacks of right flank pain of 2 weeks' duration. The pain, which radiated to the abdomen and into the scrotum, was also associated with burning on urination. Six days prior to admission the pain had become so severe that he reported to the infirmary at his place of duty, but at the time of transfer it had subsided. He had had no previous attacks.

The patient was well developed and well nourished and appeared in good health. He had minimal to moderate tenderness on deep bimanual palpation over the right flank. Examination and culture of the urine and other laboratory findings were negative.

An intravenous urogram revealed moderate hydronephrosis of the right kidney. The upper third of the right ureter showed moderate dilatation but ended abruptly at the third lumbar intervertebral space and could not be visualized in the lower two thirds. The left kidney appeared normal.

Cystoscopic examination was normal. A No. 5 French ureteral catheter was passed 28 cm. into the right ureter without meeting any obstruction and a rapid drip of clear urine was obtained. On examination it showed an occasional white blood cell in the high power field, but its culture was negative. A right retrograde ureteropyelogram revealed hydronephrosis with dilatation of the upper third of the ureter ending abruptly opposite the third lumbar intervertebral space with a definite S-shaped deformity. The

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remaining portion of the ureter (fig. 1) and the left retrograde pyelogram were normal.

A diagnosis of retrocaval ureter with hydronephrosis and ureterectasis was made. At an operation on 16 November the right ureter was found to pass behind and around the vena cava.

Figure 1. Right ureteropyelogram reveals hydronephrosis with dilatation of the upper third of the ureter which ends abruptly opposite the third intervertebral space.

The pelvis of the kidney was somewhat dilated, but the renal parenchyma appeared normal in thickness and consistency. The ureter was freed from the surrounding tissue and from the vena cava, and was severed. Because resection of the ureteral kink

would not have permitted a satisfactory anastomosis, an elliptical incision was made at the midportion of the kink. A mucosa-to-mucosa, end-to-end anastomosis of the ureter was accomplished, and a No. 10 French polyethylene tube was used as a splint. Drainage was established by means of a No. 24 French Foley nephrostomy catheter which was brought out through

Figure 2. Ureteropyelogram two months after ureteral anastomosis.

the lower pole of the kidney with the polyethylene tube. The wound was closed in layers around the drainage tubes.

The patient's immediate postoperative course was good. For the first month there was intermittent urinary drainage around the catheter and the tubing. The nephrostomy catheter was irri-

gated daily and the patient was given sulfisoxazole by mouth. On the twenty-eighth postoperative day, the polyethylene splint was removed and the nephrostomy catheter was then clamped off for five days without pain or discomfort. Pyelograms made through the nephrostomy tube on the thirty-third postoperative day revealed dye in the ureter and bladder. There was no evi-

Figure 3. Ureteropyelogram four months after ureteral anastomosis.

dence of extravasation of dye at the site of anastomosis, but the ureter at this point was irregular and dilated. The caliber of the anastomosed ureter appeared adequate. The major calyces appeared to be less dilated than on preoperative films; however, the ureterectasis remained the same. The nephrostomy tube was

removed on the thirty-eighth postoperative day following which the patient developed minimal nausea and vomiting and a mild, dull ache in the right flank for two days. The patient was discharged on 28 January 1952, when a negative urine culture from the right kidney was obtained and no demonstrative changes in the pyelogram were noted (fig. 2).

On 7 April a No. 7 French ureteral catheter was passed easily to the pelvis of the right kidney without meeting any obstruction and 12 cc. of residual urine was obtained. Ureteropyelograms showed no appreciable change from films taken on 25 January. The calyces and pelvis were slightly smaller than before the operation and the course of the ureter was more nearly normal. Irregularity and dilatation at the site of anastomosis persisted (fig. 3) even though the anastomosis appeared adequate and there was complete emptying of the dye on the 60-minute film. The urine showed 5 to 10 pus cells per high power field, but its culture was negative at the end of 48 hours. The patient's general condition was good except that on rare occasions he had some minimal right flank discomfort for several minutes. He was returned to duty but on 12 June, while en route to a new station, he was admitted to Brooke Army Hospital because during the previous four weeks he had had moderate pain in the right flank with frequent episodes of dark-brown, smoky urine. Urinalysis on admission was alkaline and contained numerous pus cells. The urine culture was positive for coliform bacteria. On 14 June, an intravenous pyelogram revealed dilated calyces and pelvis with poor drainage on the right side and a 1.5 by 2 cm. opaque density in the vicinity of the right ureteropelvic junction. A right ureteropyelogram confirmed the presence of a calculus in the kidney pelvis and the possibility of a stricture of the upper ureter. A right pyelolithotomy was performed and the calculus removed. The patient's postoperative course was satisfactory for four weeks when an unsuccessful attempt to remove the pyelostomy tube made surgical intervention necessary because of calcification around and in the lumen of the tube. On 20 July, a retrograde pyelogram revealed complete drainage in 150 minutes.

After returning from convalescent leave on 5 September, the patient was in good health and had no complaints. His urine was clear and cultures were negative. Intravenous pyelograms showed marked improvement in the caliectasis and ureterectasis. There was no evidence of urinary calculi. A personal letter from the patient received in October 1952 indicated continued improvement.

REFERENCES

1. Mullen, W. H., Jr., and Engel, W. J.: Circumcaval ureter. *Radiology* 59: 528-537, Oct. 1952.

2. Abeshouse, B. S., and Tankin, L. H.: Retrocaval ureter; report of case and review of literature. *Am. J. Surg.* 84: 383-393, Oct. 1952.

PITUITARY EOSINOPHILIC ADENOMA

Report of a Case With Multiple Complications

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FRANK B. CLARE, *Lieutenant Commander, MC, USN*

THIS report is not intended to contribute new diagnostic or therapeutic concepts to the literature, but to present a patient whose hospital course included intriguing and challenging complications which required vigorous management. We believe a narrative summary of the case may prove interesting.

A 21-year-old man, who had sustained a trivial blow to the frontal region from an overhead pipe, was admitted in June 1951 complaining of headache, vomiting, and photophobia of less than six hours' duration. The ship's medical officer noticed that his left pupil was larger than the right and recorded a pulse rate of 40.

The patient had been in good health prior to his present illness. He admitted rapid growth since 16 years of age, when he was of normal stature, to a height of 6 ft. 6 in., and he weighed 235 lb. He was an alert, co-operative patient with large feet, spade hands, and prognathism consistent with hypophyseal giantism (fig. 1). External genitalia and hair distribution were not unusual. His temperature was 98.6° F.; pulse, 48; respiration, 16; and blood pressure, 124/80. Neurologic examination revealed a partial third cranial nerve paralysis on the left and dilation of the left pupil, with normal reaction to light. Diplopia on extreme left lateral gaze, and severe photophobia were elicited. Initial laboratory studies were within normal limits. A lumbar puncture indicated an initial pressure of 160 mm. with a final pressure of 140 mm. following withdrawal of 8 cc. of crystal-clear fluid. The protein was elevated to 95 mg. per 100 cc.

Within 24 hours the patient became increasingly lethargic to the point of stupor. His temperature rose to 102° F., and he had a three plus nuchal rigidity with positive Kernig's and Brudzinski's signs. His tendon reflexes were generally hypotonic. The corneal

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reflexes were diminished, with less response on the left. Complete paralysis of the third, fourth, and sixth left cranial nerves and the sixth nerve on the right, with a partial paralysis of the right third were demonstrated. Disk margins were hazy, without papilledema. A second lumbar puncture showed an initial pres-

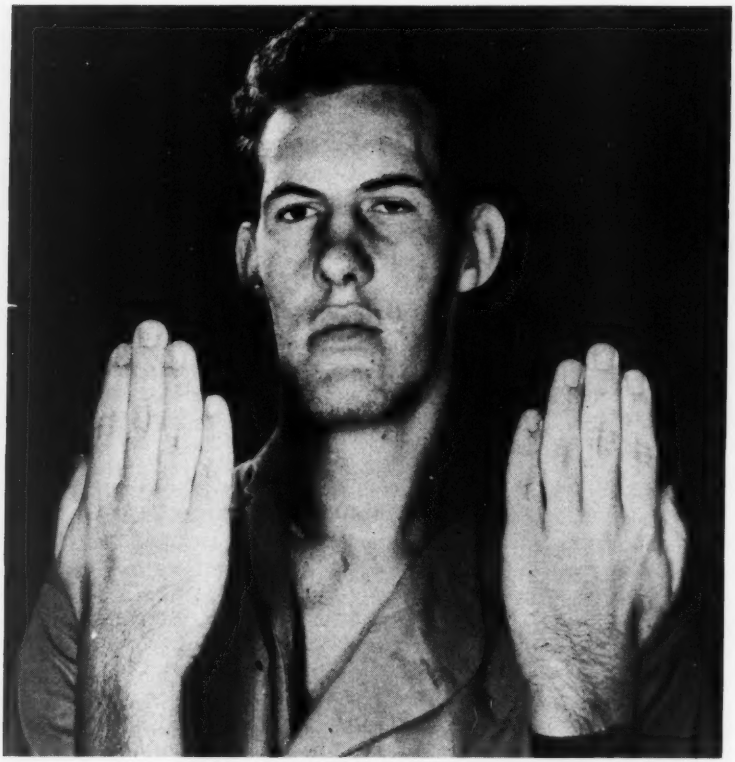

Figure 1. Mixed signs of acromegaly and giantism are present with partial third nerve involvement on the left.

sure of 280 mm. and yielded yellow-brown fluid containing 675 erythocytes and 876 leukocytes, of which 744 were polymorphoneucleocytes and 132 were lymphocytes. The total protein was 250 mg. per 100 cc. Stereoscopic roentgenograms of the skull revealed marked enlargement of the sella turcica and erosion of the clinoids and posterior three-quarters of the floor, with probable continuity with the sphenoid sinus (fig. 2). The right maxillary and ethmoid sinuses were opaque, with mucoperiosteal thickening of the left antrum. After obtaining blood and spinal-fluid cultures, we started intravenous sodium sulfadiazine and intramuscular aqueous and procaine penicillin therapy in large doses.

No growth was obtained from a blood culture, but the spinal-fluid culture revealed hemolytic *Staphylococcus aureus*.

Subjected to a fulminating meningitis, the patient's condition rapidly declined, and 48 hours after admission his temperature reached a peak of 104.8° F. with transient Cheyne-Stokes respiration lasting 1 hour. By the fifth hospital day, his fever had

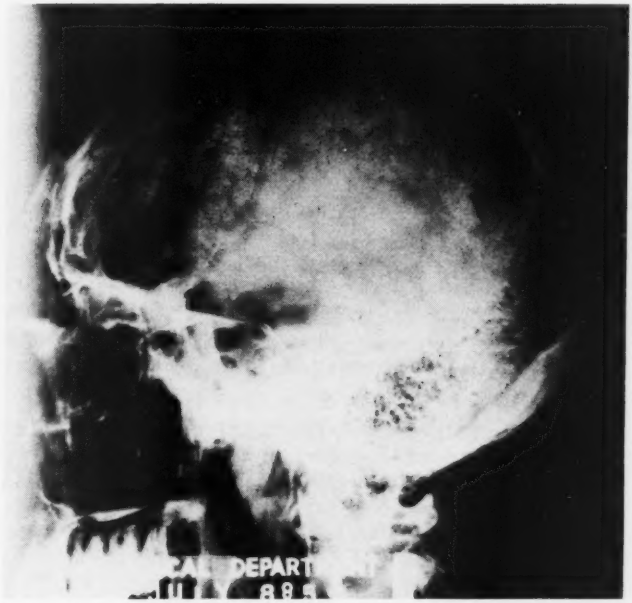

Figure 2. Roentgenogram of ballooned sella turcica with erosion of its floor prior to radiation.

decreased to 100.4° F. and his deep coma was lightened by periods of confusion, disorientation, and restlessness. Frank bilateral papilledema was present, but the other neurologic findings remained unchanged. A third lumbar puncture rendered 3 cc. of fluid with a final pressure of 444 mm. A spinal-fluid cell count showed 120 erythrocytes and 705 leukocytes with a preponderance of polymorphonucleocytes. The total protein was 135 mg. per 100 cc. Succeeding days brought cyclic changes in his mental state alternating between alertness and confusion. His speech was thick and slurred. His pupils became round and symmetrical and reacted to light. By the tenth hospital day, his temperature was normal and he resumed an alert, well-oriented attitude with only minimal nuchal rigidity. His capricious cranial nerve paralysis became limited to the third and sixth on the left and the sixth on the right. Evaluation of his visual fields showed bi-

lateral peripheral constrictions and enlargement of the blind spot on the right.

The patient's recovery from meningitis appeared complete by the third week, but the involvement of his extraocular muscles and peripheral vision persisted. In the absence of papilledema at this time, roentgen therapy, directed toward the pituitary fossa, was cautiously started. Employing three ports of 48 sq. cm. each to the frontal and temporal areas, a calculated tumor dose of 2,729 *r* was administered in 30 days. Dramamine and intravenous fluids adequately controlled intermittent radiation sickness for two weeks during the treatment. Daily funduscopic visual acuity and field examinations during this period showed no adverse reaction to therapy. On completion of the course, his visual field and acuity were normal and only a slight weakness on right lateral gaze remained. Five days after concluding this treatment, cerebrospinal rhinorrhea developed and continued for four days. Prophylactic antibiotics were continued until its cessation was assured. Spinal fluid obtained by lumbar puncture was normal except for elevation of the protein to 95 mg. per 100 cc. The patient continued to do well except for a persistent low-grade anemia and his failure to regain 75 lb. of weight lost since admission.

Complaints of intermittent abdominal cramps, nausea, vomiting, and weakness preceded another acute onset of lethargy and semistupor with a precipitous fall of blood pressure from 110/80 to 70/40. Previous insidious development of lemon-yellow skin, thickening of the tongue, decrease of libido, and tawny pigmentation at the buccal angles and lumbar region were prodromal symptoms of hypopituitarism and adrenal insuffiency. Confirmatory blood chemistry studies, adrenalin, and ACTH Thorne tests were obtained and the patient was immediately given intravenous saline and 35 mg. of ACTH intramuscularly, every six hours. Dramatic clinical improvement followed in 48 hours. Laboratory studies indicated the presence of viable adrenal cortex with insufficiency secondary to panhypopituitarism. Because his basal metabolic rate ranged consistently from minus 35 and to minus 45 he was given 0.3 gram of thyroid extract daily with mineral supplements of calcium, potassium, and iron. Despite adequate medication directed toward the endocrine dysfunction anemia, two blood transfusions were required; these resulted in marked clinical improvement. Gradually the medication was decreased to minimal maintenance doses of 5 mg. of ACTH q. i. d. and 0.25 gram of thyroid extract daily. This was accomplished with the guidance of exhaustive periodic laboratory studies, including basal metabolic rates, glucose tolerance and blood chemistry tests, and circulating eosinophil counts. From the low level of the basal metabolic rate we believed that hypothyroidism was

the dominating feature of his hypopituitarism. Other laboratory determinations and vital signs remained normal.

By March 1952 all medication except thyroid extract, vitamins, and minerals was discontinued. Roentgenograms of the skull at this time showed evidence of recalcification of the clinoids and pituitary fossa. The patient regained his strength and weight (to 207 lb.) on this regimen.

During exceptionally hot weather in June 1952 he again developed signs and symptoms of adrenal insufficiency, manifested by weakness, malaise, and gastrointestinal complaints. The condition was evidently precipitated by salt depletion, but responded rapidly to ACTH and intravenous saline. Of particular interest was his cheerful and co-operative attitude despite a long illness and intensive study. Patients afflicted with eosinophilic adenoma are considered prone to exhibit irritable natures.

Upon the termination of his hospitalization in July 1952, this patient was improving steadily without adrenotrophic or replacement therapy except thyroid. A constant vigil for signs of insufficiency must be maintained throughout his life. A letter from him in May 1953 revealed that he was feeling well and had received no medication of any kind for six months. He weighed 203 lb. and is an outpatient at the Veterans Administration Hospital near his home.

SUMMARY

The spontaneous complications of an eosinophilic adenoma of the pituitary gland and disturbances following radiation therapy are reported in a patient, admitted because of an apparent head injury, who developed an acute fulminating meningitis secondary to erosion of the sella turcica by a pituitary adenoma. The appearance of panhypopituitarism and acute adrenal insufficiency required prompt management and prolonged substitution therapy.

While we would not say that urban air pollution is responsible for "*the* increased incidence of lung cancer," it does seem to be *one* significant factor in this increase. Any factor associated with a doubling of the lung cancer rate is certainly significant, especially when its doubling can scarcely be linked to housing, nutritional state, socio-economic status or any other environmental factor except irritants in the air breathed.

—C. A. MILLS, M. D.
in the *American Journal of the Medical Sciences*

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FAMILIAL SCAPHOCEPHALY IN FATHER AND SON

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SCAPHOCEPHALY is one of the rarer forms of craniostenosis and occurs as a result of premature synostosis of the sagittal suture of the skull. Unable to grow laterally, the skull assumes an elongated form which has been described as "boat-shaped" or "football-shaped." Its cause is unknown.[1] Greene[2] has shown in rabbit breeding experiments that premature synostosis of the cranial bone is hereditary. Very few hereditary cases have been reported in man.[3,4] Greig[5] in discussing oxycephaly, stated that "as a congenital defect heredity ought to occur, but examples are restricted since those but slightly affected do not seek medical advice, and those grossly affected are not acceptable in marriage." Most scaphocephalics are sporadic, isolated cases. The prognosis is usually guarded because of the high incidence of associated hydrocephalus, mental deficiency, and blindness resulting from pressure upon the optic nerves.[6-9]

This report describes two cases of scaphocephaly in one family, involving the father and his infant son.

CASE REPORTS

Case 1. A 2½-month-old white male infant was admitted to this hospital on 15 October 1952. Scaphocephaly and hydrocephalus had been noted in the outpatient clinic where he had been brought because of an upper respiratory infection. The patient was born 21 July 1952 at this hospital, by spontaneous delivery following a normal pregnancy of nine months. His birth weight was 7 lb., 1½ oz. His mother was a 20-year-old primipara and in good health. The infant's neonatal course and routine examination one month later were normal. The gradual elongation and enlargement of the head was unnoticed by the parents. For a month his cry was high pitched but he had seemed content and healthy.

The patient was a well-nourished infant with an enlarged, narrow, and elongated head. Prominent frontal bossing was present, and the sutures of the skull were separated. The posterior fontanelle was open and the anterior fontanelle was en-

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larged and bulging. A raised bony ridge represented the closed sagittal suture. The veins of the scalp were distended and the eyes bulged forward and downward. Macewen's sign was elicited upon tapping the head. Head and chest measurements are given in table 1.

TABLE 1. *Head and chest measurements of infant, case 1.*

Age (months)	Head circumference (cm.)	Chest circumference (cm.)	Head occipito-frontal diameter (cm.)	Head biparietal diameter (cm.)	Anterior fontanelle (cm.)
2½	41.6	39.5	17.9	10.2	9x4
4	45.2	41.4	17.2	10.8	8.1x4
5½	47.1	45.2	17.9	10.8	7x4
7	47.1	46	18.5	11.5	7x4
8	47.8	46	18.5	11.5	6.8x4
9½	48.5	45.5	18.5	11.5	6.5x4

Roentgenograms of the skull demonstrated increased intracranial pressure. Those of the lumbosacral spine did not reveal evidence of spina bifida occulta. A lumbar puncture produced an initially clear, slowly dripping fluid, which was sterile. The subdural taps were traumatic because of the distended network of scalp veins. Five cubic centimeters of spinal fluid was removed from each subdural space which was clear after centrifugation.

A consultation was obtained at Walter Reed Army Hospital, where the diagnosis was confirmed and conservative treatment advised rather than an immediate operation. The infant remained healthy except for occasional mild respiratory infections. He received routine immunizations and developed normally. He smiled at two months of age, and at three months his eyes focused very well. At five months he was bright, inquisitive, could grasp with his hands and roll over, and was teething. He could sit at seven months and crawled two weeks later. At nine months of age he was active (fig. 1), had good vision, and reached out with either hand. The eyes still bulged and his head configuration was the same, but the scalp veins were no longer as prominent and the anterior fontanelle did not bulge.

Case 2. The father of the infant described above is 27 years old, and was one of five children. His parents, grandparents, and siblings were all normal, but his photograph at six months of age showed typical scaphocephaly. His grandfather, a physician, was said to be greatly concerned about his head size in the first months of infancy. He advanced normally in school and com-

pleted the eleventh grade. His scoring on an Air Force aptitude test was average, or above, in all proficiency fields. His eyesight was excellent, and he was efficient and energetic in the performance of his duties. The patient's head shape is still moderately scaphocephalic (fig. 2) but the size is only slightly enlarged in proportion to his body size.

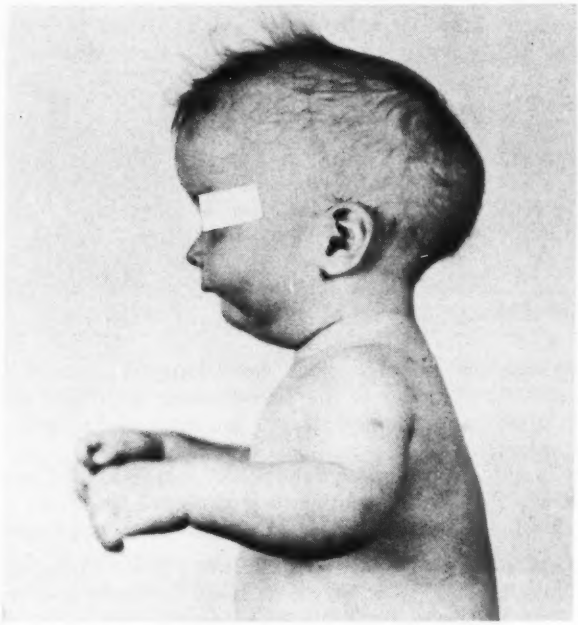

Figure 1. Photograph of nine-month-old infant with long narrow head shape due to scaphocephaly.

DISCUSSION

These observations of two patients with scaphocephaly in one family represent a rarity in the medical literature. They differ from most reported instances of scaphocephaly because they have developed satisfactorily without treatment, despite early symptoms of hydrocephalus and increased intracranial pressure. Although Duguid's[3] four sibling patients were backward, with I. Q.'s of from 68 to 90, the prognosis may be better in familial rather than in isolated instances.[1] Many authors[10-12] warn that early treatment is mandatory, with parasagittal craniectomy or decompression operation, preferably before three months of age. In evaluating such a patient for possible operation it may be helpful to determine whether one is dealing with a familial or an isolated occurrence. A thorough family history,

including an actual examination of all available blood relatives, should be done. As in the case of the infant patient, the discovery of childhood pictures of the father aided in establishing the familial aspect of the condition.

Figure 2. Father of infant at 27 years of age, showing head shape of scaphocephaly.

REFERENCES

1. Mitchell, I. R.: Premature synostosis in associated phenomena. In McQuarrie, I. (editor): Brenneman's Practice of Pediatrics. Vol. 4. W. F. Prior Co., Inc., Hagerstown, Md. 1948. pp. 7, 15.

2. Greene, H. S. N.: Oxycephaly and allied conditions in man and in rabbit. *J. Exper. Med.* 57: 967-976, June 1933.

3. Duguid, H.: Instance of familial scaphocephaly. *J. Ment. Sc.* 75: 704-706, Oct. 1929.

4. Hilson, D.: Scaphocephaly in brother and sister; unusual incidence of this form of premature synostosis of skull bones. *Clin. Proc.* 6: 64-70, Apr. 1947.

5. Greig, D. M.: Oxycephaly. *Edinburgh M. J.* 33: 189-218, Apr. 1926.

6. Virchow: Überden cretinismus namentlich in Franken, ünd über pathologische Schadelformen. *Verhandl. d. Physik. Med. Gesellsch. Wurzburg* 2: 230, 1851.

7. MacKenzie, W.: A Practical Treatise on Diseases of the Eye. Blanchard & Lea, Philadelphia, Pa., 1855. p. 116

8. Sear, H. R.: Some notes on craniostenosis. *Brit. J. Radiol.* 10: 445-487, June 1937.

9. Gourfein, D.: Deux nouveaux symptômes oculaires dans l'oxycéphalie ou dans les cranio-synostoses prématurées et leur pathogénie. *Arch d'opht.* 48: 112-119, Feb. 1931.

10. Bennett, A. E.; Keegan, J. J.; and Hunt, H. B.: Oxycephalus: premature synostosis of cranial sutures; prevention of blindness by craniectomy and decompression; 2 case reports. *J. Nerv. & Ment. Dis.* 84: 274-282, Sept. 1936.

11. Mount, L. A.: Premature closure of sutures of cranial vault—plea for early recognition and early operation. *New York State J. Med.* 47: 270-276, Feb. 1, 1947.

12. Ingraham, F. D.; Alexander, E., Jr.; and Matson, D. D.: Clinical studies in craniosynostosis; analysis of 50 cases and description of method of surgical treatment. *Surgery* 24: 518-541, Sept. 1948.

Armed Forces Medical Library

The following bibliographic material may be obtained upon application to the Director, Armed Forces Medical Library, Washington 25, D. C.:

Bibliography of military psychiatry, 1947-1952; literature relating to U. S. Armed Forces with selected references relating to British forces. 1953. 545 references.

Gas gangrene and gas gangrene organisms, 1940-1952; an annotated bibliography of the Russian literature, 1940-1952, and the non-Russian literature for 1952. 1953. 324 references.

Fat embolism; a preliminary list of references chiefly covering the years 1940-1950; 135 references; partially annotated.

Fibrinolysin, profibrinolysin, and antifibrinolysin; a preliminary list of references. 1951. 243 references.

Intravenous injection of fats and oils for nutritive purposes; a comprehensive list of references to 27 September 1951. 170 references.

Lower nephron nephrosis; selected references in English, French, and German, 1940-1950. 1951. 241 references. Partially annotated.

Nitrogen[15] in biological research; a preliminary list of references to August 1951. 150 references.

Pathology and physiology of thermal burns, 1942-1951; an annotated bibliography. 1952. 611 references.

The pituitary-adrenocortical function: ACTH, Cortisone, and Related Compounds. 1950. 3,431 citations.

Plasma substitutes; except those derived from human blood, 1940-1951; an annotated bibliography. 1951. 888 references.

Psychopathology of aging (cognitive and perceptual aspects of aging); a selective list of references chiefly covering the years 1948-1952. 1952. 88 references.

Foreign military medical serials, 1945-1950. 1951. 68 items.

Journals on neurology, psychology, and psychiatry currently received in the Army Medical Library, Washington, D. C., 1 June 1949. 134 items.

Journals on radiology currently received in the Army Medical Library. 1 December 1949. 58 items.

Medical photography and radiography; a list of recent books and current periodicals in English. 29 August 1952. 38 references.

Reference tools for hospital medical libraries; a selected list of reference tools in medicine and allied fields, in English, emphasizing publications of the last decade. 1952. 121 items.

A bibliography of military medicine relating to the Korean conflict, 1950-1953. 1953. 194 references.

PROLAPSE OF THE UTERUS WITH SPINA BIFIDA IN THE NEWBORN

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NATHANIEL R. WHITNEY, *Captain, USAF (MC)*

THE association of prolapse of the uterus with spina bifida in newborn infants, although not unknown, is uncommon. Noyes[1] found 24 cases in a complete review of the literature and added 1 of his own. Subsequent isolated occurrences have been reported. Torpin[2] described 2 patients seen in the same institution. Because of the infrequency of this association, we are here reporting an additional case.

CASE REPORT

The patient was born spontaneously on 21 November 1952, although the estimated date of delivery was 7 October. The mother was a primipara and her pregnancy had been uneventful except for what was described as a virus infection which occurred during the third month of gestation. This diagnosis could not be confirmed. The infant weighed 3,045 grams at birth, and presented a large spina bifida with a meningocele in the lumbar region. At its base, the meningocele measured 6 by 4 cm., and it projected 4 cm. above the skin surface. Talipes equinovarus was present bilaterally, but was more pronounced on the left. No other abnormalities were noted at birth.

On 24 November 1952 a mass, identified as the cervix and the lower portion of the fundus of the uterus, was observed protruding from the vagina. The uterus was replaced manually, but it prolapsed recurrently whenever the infant cried or strained. Straining also produced loss of urine.

The patient took feedings poorly, and progressively lost weight. The meningocele continually drained fluid. On 12 December 1952, she developed pneumonia and died 2 days later. At the time of death, she weighed 2,370 grams. Permission to perform an autopsy was not obtained.

DISCUSSION

Early surgical repair of meningocele associated with spina bifida recently has been advocated. The possibility of prolapse of the uterus and of urinary complications, however, should be

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kept in mind when surgery is contemplated. Prolapse usually occurs during the first week of neonatal life.[4] Ebeler and Duncker,[5] von Graff,[6] and Laws,[7] all have discussed the occurrence of uterine prolapse in nulliparous adults with spina bifida.

REFERENCES

1. Noyes, I. H.: Uterine prolapse associated with spina bifida in newborn; report of case. *Am. J. Obst. & Gynec.* 13: 209-213, Feb. 1927.
2. Torpin, R.: Prolapsus uteri associated with spina bifida and clubfeet in newborn infants. *Am. J. Obst. & Gynec.* 43: 892-894, May 1942.
3. Torpin, R., and Burpee, C. M.: Prolapsus uteri associated with spina bifida and clubfoot in newborn infants. *Am. J. Dis. Child.* 66: 627-628, Dec. 1943.
4. Findley, P.: Prolapse of uterus in nulliparous women. *Am. J. Obst.* 75: 12-16, Jan. 1917.
5. Ebeler, F., and Duncker, F.: Der Angeborene prolapsus uteri bei einem mit spina bifida behaftetan neugeborenen. *Ztschr. f. Geburtsh. u. Gynäk.* 77: 1-19, 1915.
6. von Graff, E.: Etiology of prolapse. *Am. J. Obst. & Gynec.* 25: 800-809, June 1933.
7. Laws, G. M.: Consideration of lumbosacral spina bifida occulta with special reference to uterine prolapse. *Am. J. Obst. & Gynec.* 33: 126-131, Jan. 1937.

Hypertension

Men sustain coronary occlusion much more frequently than women, and at an earlier age. The frequency of hypertension in the men studied averaged 27.2 percent, and increased only slightly, if at all, with age. More than 70 percent had had a normal blood pressure before the onset of the coronary occlusion! Hypertension, therefore, is not the all important factor in the causation of coronary occlusion in men. This conclusion differs from that of any reported studies on the relationship of increased blood pressure to the onset of coronary occlusion.

Seventy-one percent of the women had had hypertension preceding the attack. In women who sustain coronary occlusion, therefore, hypertension is a very significant etiologic factor.

The results of a recent postmortem study confirmed our clinical findings: hypertension did not appear to be a factor in producing coronary disease and occlusion among men, but was a definite factor in its causation among women.

—ARTHUR M. MASTER, M. D.
in *Circulation*

GENERALIZED VACCINIA IN THE PRESENCE OF DIFFUSE DERMATITIS

ROBERT J. HALL, *Captain, MC, USA*

COMPLICATIONS of properly performed vaccinations for smallpox are rare. They include local pyogenic infection, tetanus, postvaccinal encephalitis, and generalized vaccinia.[1,2] Thirty-six cases of generalized vaccinia were reported in over six million vaccinations during the small outbreak of smallpox in New York City in 1947.[3] Although the terminology suggests hematogenous dissemination, the influence of concomitant skin diseases would seem to indicate that autoinoculation plays a more important role in the pathogenesis[4] of generalized vaccinia.[4]

CASE REPORT

A 21-year-old man who had never been immunized for smallpox prior to entering the service, was vaccinated on 30 August 1952 with no "take." In early December he noted the onset of a pruritic oozing eruption in the left axilla, which by January had spread to the groin, perineum, neck, and face. The involved skin was red, scaly, and pruritic, with weeping in the intertriginous areas. He noted dandruff for the first time. He was revaccinated at a replacement depot in Japan on 7 February 1953, in spite of the dermatitis. His rash became rapidly worse and the pruritus increased. He was examined at his unit dispensary on 13 February and treated with penicillin. The following day he complained of malaise, headache, and chilliness. His headache became more severe and a red papular rash developed on his face. He was admitted to a dispensary on 15 February with a temperature of 104° F. His vaccination at this time was pustular, surrounded by a large area of erythema and edema, and beginning to form a superficial crust. His elevation in temperature persisted and he was transferred to this hospital on 19 February 1953.

On admission he was acutely ill with a rectal temperature of 104° F. and pulse rate of 140. Innumerable pustular encrusted lesions, discrete and confluent, were present over his face, eyelids, neck, axillas, groins, genitalia, and popliteal areas. Massive edema of his face (fig. 1) prevented opening the eyes; both auditory canals were draining and the right was edematous and oc-

From U. S. Army Hospital, Camp Sendai, Japan.

cluded. The lesions in the intertriginous skin folds were macerated and weeping. The corneas were not involved. The primary vaccination on the left arm was covered with a large eschar. A diagnosis of generalized vaccinia was made.

Figure 1. Massive edema of the face in generalized vaccinia.

On admission the leukocyte count was 14,600 with 82 percent polymorphonuclears. Prophylactic antibiotic therapy was instituted. The temperature ranged between 102° and 105° F. for the first two hospital days; and a low grade fever persisted through the eighth day. A diffuse morbilliform rash appeared on the third day and rapidly faded during the next two days. The cutaneous lesions were exposed to the air to facilitate drying. By the fifth hospital day, the edema had almost completely subsided and crusting of the lesions started. Improvement continued and al-

most complete clearing occurred by the twenty-first hospital day. Minimal scarring resulted. The underlying seborrheic dermatitis remained in evidence after complete clearing of the vaccinia (fig. 2).

Figure 2. Five weeks later patient had minimal scarring of face.

DISCUSSION

The antecedent dermatitis played an important role in the disseminated vaccinia observed in this patient, and the pruritic nature of the rash makes autoinoculation most plausible. Vaccinations should not be performed in children with eczema, but, because of its infrequency, little thought is given to the possibility of generalized vaccinia occurring in the military age group. Prior vaccination of nearly all adults almost eliminates this

problem. Routine primary vaccination should not be performed on persons with active skin conditions but revaccination is relatively safe. The absence of immunity from previous vaccination and the concomitant dermatitis in the patient reported appeared to be related to the occurrence, severity, and distribution of the generalized vaccinia. Because of the possibility of scarring from generalized vaccinia, an appreciation of this complication is important.

REFERENCES

1. Cecil, R. L., and Loeb, R. F.: Textbook of Medicine. 8th edition. W. B. Saunders Co., Philadelphia, Pa., 1951. pp. 41-42.

2. Rivers, T. M. (editor): Viral and Rickettsial Infections of Man. J. B. Lippincott Co., Philadelphia, Pa., 1948. pp. 325-326.

3. Pullen, R. L. (editor): Communicable Diseases. Lea & Febiger, Philadelphia, Pa., 1950. pp. 116-117.

4. Maxcy, K. F.: Rosenau Preventive Medicine and Hygiene. 7th edition. Appleton-Century-Crofts, Inc., New York, N. Y., 1952. pp. 14-15.

Wars and Old Books

It has long been known that major wars in Europe tend to stimulate the antiquarian book trade and to move masses of old books and manuscripts to new locations. They are not actually shot from guns out of one country into another, but the result is almost the same as if they had been. War causes poverty and distress, and after a war many families having rare and valuable books bring them out and offer them for sale in order to obtain the necessities of life. After the Napoleonic Wars rare books and manuscripts moved in quantities from the European continent to England, and thus the foundations were laid for many of the great British collections, notably that of Sir Thomas Phillipps, who has been called "the greatest collector of manuscript matter the world has ever known." After the first World War the migration was from the European countries, including England, to America. Some of the most notable American collections were greatly expanded at that time.

—From Armed Forces Medical Library *News*

SUPERNUMERARY INTRATHORACIC RIB

A Case Report

WILLIAM M. MARBUT, *Lieutenant Colonel, MC, USA*

WILLIAM L. DeGINDER, *First Lieutenant, MC, USA*

THIS report of a patient with a supernumerary intrathoracic rib is of interest because we have not found a description of this particular type of anomaly in the literature.

A 20-year-old woman was seen in the outpatient clinic because of repeated episodes of severe aching pain beneath the right scapula and a sharp stabbing pain of 24 hours' duration which was related to respiratory motions and coughing. Physical examination was negative. A routine roentgenogram of the chest was essentially normal except for a heavy vascular shadow descending from lower pole of the right hilum (fig. 1). The patient was treated with acetylsalicylic acid and local heat applications but she returned in 1 week with the same complaint. Anteroposterior and lateral roentgenograms of the thorax were made and an anomalous intrathoracic rib was evident at once (figs. 2 and 3). The possibility of calcified empyema was excluded by the history and by the fact that the right lung field appeared completely normal except for this anomalous structure.

Certain features of the past history are of interest. The patient fell from a log when she was a child and injured her upper thoracic spine. No roentgenograms were made but she was kept in bed for 3 days. She had had intermittent aching and stabbing pains in the upper thoracic spine and right subscapular area since that time, and believed that these pains were due to the injury received in the fall. Unusual activity or exertion was often followed by pain, and sitting for a long interval might also start it. Only once before had there been any particular relationship between the pain and respiratory motions. In 1950, she was hospitalized for severe sharp stabbing pain related to coughing or deep respiration. She was treated for pleurisy and although several roentgenograms were made she was sent home in 5 days with the assurance that "there was nothing wrong with her chest

From U. S. Army Hospital, Camp Roberts, Calif. Lt. Col. Marbut now at 110th Station Hospital, U. S. Army.

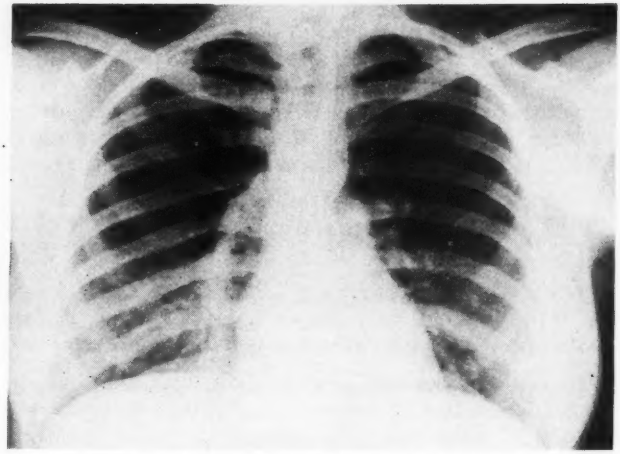

Figure 1. Routine posteroanterior roentgenogram of chest.

or spine.* She had had roentgenographic examinations on at least 3 occasions prior to that hospitalization.

DISCUSSION

The roentgenograms made with standard technic for lung detail did not reveal the nature of the heavy shadow that extended from the lower pole of the right hilum to the diaphragm. It was precisely superimposed upon the vascular pattern and appeared to

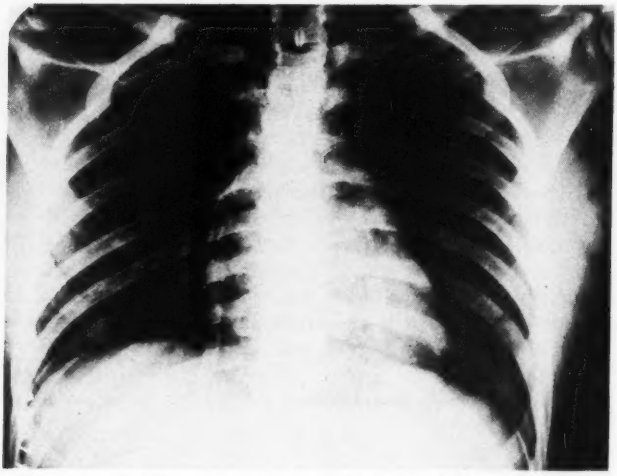

Figure 2. Re-examination with higher peak kilovoltage.

branch at its lower extremity. Posteroanterior and lateral projections made for detail of the thoracic spine showed a complete and well-formed rib articulating with the right anterior margins of the sixth and seventh thoracic vertebral bodies at the interspace. Normal rib articulations were visible behind it, and there were 12 normal ribs on each side. The lateral view showed the supernumerary rib well within the posterior thoracic wall, surrounded by normal lung. An attempt was made to have the patient return for additional examinations, but she had moved from

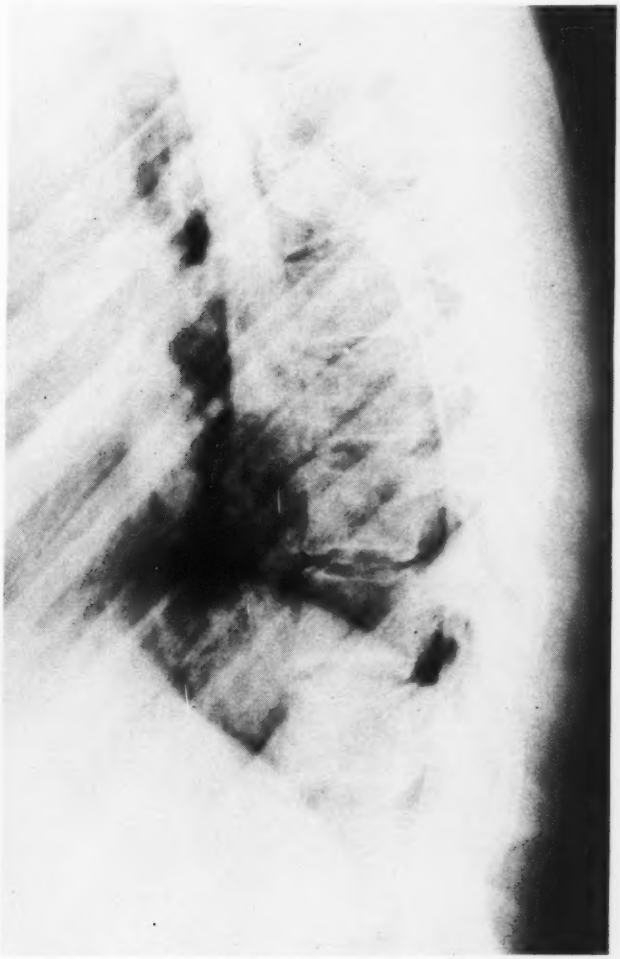

Figure 3. Lateral projection showing the intrathoracic position of the supernumerary rib.

this region. From a study of the roentgenograms we believe that the anomalous rib lay completely enfolded within the lung in a reflection of parietal and visceral pleura in much the same way that the azygos vein is embedded in the apex of the lung to produce the anomalous azygos lobe. The parietal pleura around this rib was sensitive to pain and subject to friction. The unusual stresses imposed upon this fold of pleura could predispose it to inflammation, and the aching pain in the region of the sixth and seventh thoracic vertebras, which constituted the patient's major complaint, may be explained on this basis.

This intrathoracic rib had been overlooked by several physicians and at least 3 radiologists in the standard posteroanterior roentgenograms of the chest. Others have probably been missed in a similar manner. It is not possible to take stereoscopic or routine lateral roentgenograms on all patients in large institutions, but one can usually be certain whether or not there is something peculiar or abnormal in the routine posteroanterior view. The reliability of this single view as a survey procedure is generally accepted, but only by re-examination and special positioning is it possible to identify the various abnormalities that may be suspected through examination of the routine posteroanterior roentgenogram of the thorax.

"THE SIX COMMANDMENTS OF BIOPSY"

Biopsy all suspicious growths unless there are definite contraindications.

Instigate a thorough search for a possible primary before incising a suspicious lymph node.

Obtain adequate representative tissue without crushing, shredding, or burning the specimen.

Prepare and fix the tissue in formalin and promptly submit for pathologic examination.

Supply a pertinent clinical history to the pathologist, including age, site, and past therapy.

You must never accept a negative report as final if suspicion still exists.

—from the *Cancer Bulletin*

EOSINOPHILIC GRANULOMA OF BONE

RICHARD G. LESTER, *Captain, USAF (MC)* (1)

WHEN an isolated bone tumor with an area of circumscribed rarefaction is discovered during roentgen studies, eosinophilic granuloma should be considered in the differential diagnosis. This tumor has been defined as "a granulomatous proliferation of the reticulum cells." (2) It is usually considered to be related to Hand-Schüller-Christian and Letterer-Siwe diseases but is not of the same series as the lipoid reticuloses, such as Gaucher's disease. Eosinophilic granuloma, as well as the other more severe forms of granuloma, may well represent "a peculiar inflammatory reaction to some as yet unknown infectious agent." (3)

Although lesions which were probably eosinophilic granuloma were reported as early as 1929, it was not until 1940 that Otani and Ehrlich (4) and 2 months later Lichtenstein and Jaffe (5) reported the first recognized cases. (The former group termed the growth a "solitary granuloma of bone," whereas Lichtenstein and Jaffe used the term now generally accepted.) Many cases have been presented since then (6-11).

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(1) 6110 Hospital Group at time of writing; now at Stanford University Hospitals, San Francisco, Calif.

(2) Pugh, D. G.: Roentgenologic diagnosis of diseases of bones. In Golden, R. (editor): Diagnostic Roentgenology. Williams & Wilkins Co., Baltimore, Md. Vol. II, p. 475.

(3) Jaffe, H. L., and Lichtenstein, L.: Eosinophilic granuloma of bone; condition affecting one, several or many bones, but apparently limited to skeleton, and representing mildest clinical expression of peculiar inflammatory histiocytosis also underlying Letterer-Siwe disease and Schüller-Christian disease. Arch. Path. 37: 99-118, Feb. 1944.

(4) Otani, S., and Ehrlich, J. C.: Solitary granuloma of bone simulating primary neoplasm. Am. J. Path. 16: 479-490, July 1940.

(5) Lichtenstein, L., and Jaffe, H. L.: Eosinophilic granuloma of bone, with report of case. Am. J. Path. 16: 595-604, Sept. 1940.

(6) Baker, G. S., and Fisher, R. G.: Eosinophilic granuloma of skull; report of 4 cases, with 5-year follow-up. S. Clin. North America 28: 1057-1070, Aug. 1948.

(7) Michael, P., and Norcross, N. C.: Eosinophilic granuloma of bone. U. S. Nav. M. Bull. 45: 661-668, Oct. 1945.

(8) Pretyl, K.: Ueber das sogenannte eosinophile Granulom des Knochens und seine Beziehungen zur Hand-Schüller-Christianschen Krankheit. Wien. Klin. Wchnschr. 62: 841-845, Nov. 10, 1950; abstract, J. A. M. A. 145: 767, Mar. 10, 1951.

(9) Brody, A. J., and Gillespie, J. O.: Multiple eosinophilic granuloma of bone with pulmonary involvement. U. S. Armed Forces M. J. 2: 1669-1680, Nov. 1951.

(10) French, S. W.: Eosinophilic granuloma of rib. U. S. Armed Forces M. J. 2: 1681-1684, Nov. 1951.

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Typically, the tumor is solitary and may be found in any bone. It seems to have a predilection for the ribs, skull, and ilium. Multiple granulomas having the appearance of eosinophilic granuloma have been reported in several bones in the same patient and, in addition, visceral tumors have been reported. Pugh *(2)* points out that growths may be discovered later in other parts of the body after an apparently isolated tumor has been identified. In many patients no symptoms referable to the tumor can be elicited. Slight pain and tenderness may occur over the site of the lesion and a slight elevation of temperature and, in some cases, leukocytosis and/or eosinophilia may be present. Especially in cases where a rib is involved, a fracture across the involved area may be incurred and symptoms may date from the time of mild trauma.

Roentgenograms show an area of well-demarcated radiolucency within the medulla of the affected bone. Usually no reaction about the lesion is seen. In rib tumors the lesion may be somewhat expansile and, in those patients in whom a fracture occurs across its site, some local reaction can at times be seen *(3)*. Grossly the specimen is usually soft and friable. Under the microscope the most outstanding feature is large collections of eosinophilic leukocytes, and in Lichtenstein and Jaffe's words, "the presence of compacted, tumorlike aggregates of large phagocytic cells, with conspicuous collections of eosinophilic leukocytes interspersed." *(5)* As they point out *(3)* the basic cells of the tumor are histiocytes and the eosinophils are its imprint. Other demonstrable cell types include leukocytes, multinucleated giant cells, lymphocytes, and products of destruction and repair. Foam cells may also be seen, especially in old lesions, and are similar to those in Hand-Schüller-Christian disease. A number of observers have pointed out the similarities in the microscopic picture of this disease with Hand-Schüller-Christian and Letterer-Siwe's disease *(12)*.

Treatment of eosinophilic granuloma may be either wide excision of the lesion or the use of radiation. A biopsy should be performed in all instances except when there is no doubt as to the diagnosis. If radiation is used, Baker and Fisher *(6)* recommend that curettage not be performed at the time of biopsy because bony proliferation will occur more readily from a spicular matrix.

CASE REPORT

A 35-year-old man was admitted to the hospital because of dull pain in the region of the right posterior lower rib cage of

(11) Case 38372: Eosinophilic granuloma of rib. (Case Records of the Massachusetts General Hospital section) New England J. Med. 247: 410-413, Sept. 11, 1952.

(12) Mallory, T. B.: Medical progress; pathology, diseases of bone. New England J. Med. 227: 955-960, Dec. 17, 1942.

1 month's duration. The pain had begun abruptly following a jeep accident, but was not so severe that he sought medical attention immediately. During the interim there had been a 10-pound loss of weight but no other symptoms. Physical examination revealed an area of tenderness over the right eleventh rib, posteriorly, in the midscapular line with a definite irregularity along its superior border. No other physical signs were elicited. Roentgenograms of

Figure 1. Roentgenogram showing osteolysis in the right eleventh rib.

the thorax showed an area of osteolysis in the right eleventh rib with ragged borders and with interruption of the cortex superiorly (fig. 1). An extensive roentgenographic bone survey did not reveal any other significant lesions. Blood studies and a sternal marrow biopsy were within normal limits. The lesion was removed surgically. Gross examination showed a hard, gritty, gray-tan mass surrounded by bony tissue, except in 1 area where it had almost entirely replaced the bone. On section, the mass was light gray, firm, and homogeneous. Microscopic examination showed the typical picture of eosinophilic granuloma.

THE RELATION OF PHYSICIAN AND PHYSICAL THERAPIST

ROBERT W. AUGUSTINE, *Lieutenant Colonel, USAF (MC)*

THE practice of medicine has become a complicated undertaking. The extensive ramifications of the healing art have passed beyond the mastery of any one person. Technically trained workers can be of great assistance to the physician. Intelligent patient care is rendered by many people of various stations, and their limitations are defined only by their innate abilities and ethical applications in their special field of training. These associates have become invaluable in the care of the patient.

The final decision in medical matters must be made by one person. Such decisions are best made by the physician because of the greater insight he has gained from training and practice. This insight enables him to co-ordinate the efforts of the auxiliary medical services to provide the best care for the patient with efficiency and minimum effort. Perhaps the greatest pitfall for members of the medical auxiliaries, such as physical therapists, is for them to practice their profession without acquiring the insight that separates the practical actions from the superfluous, the disease-assuming patient from the ill, the time-honored sterotyped modality from the effective method, and remunerative practice from the needed treatment.

CLOSE LIAISON NECESSARY

There must be close liaison between the physician and his auxiliary specialists. This communal relationship should be sponsored by both parties, and must not be obstructed by the common attitude that the physician is superior in all things of a medical nature. Leadership by the doctor of medicine is necessary to guide technical medical assistants, and should include a full explanation of the subject and a practical demonstration, when indicated. The authority of the physician should be exercised in a constructive form so that those under his supervision increase their knowledge of the medical sciences, and improve their capabilities of service to the patient. The physician's authority, should not be used to insure subordination or prevent his assistants from gaining clinical knowledge that will aid them

From U. S. Air Force Hospital, Maxwell Air Force Base, Ala.

in their duties. He must be a teacher and impart to his trained medical assistants scientific and critical methods of approach to clinical procedures.

Within any auxiliary medical specialty, such as physical therapy, one must develop and practice those methods which produce evidence of improvement in the patients, favorable follow-up studies, and the approval of others in the same field of medicine. This does not preclude independent thinking and constructive changes, but eliminates the projection of the medical subspecialty beyond its reasonable limits. The physical therapist, like all other medical auxiliaries, must have the desire to increase her knowledge and capabilities or else she will become perfunctory and unenlightened in the performance of her duties.

REDUCTION OF INEFFECTIVENESS

The object of medical care in the Armed Forces is to conserve our fighting strength. The attitude of the medical profession and its allied sciences must be dynamic in promptly returning the patient to active duty. A portion of our service personnel, as of the general population, are persons who readily assume a dependency reaction fostering invalidism, with unusual self-centered concern for their well being and an attitude of noneffectiveness. Even aggressive individuals may succumb to the attraction of the patient status and its freedom of responsibility. Their burdens are transferred to others in an unreasonable proportion.

Perhaps the greatest transgression of both the physician and his auxiliary assistant is the assumption of diagnoses not based upon sound pathologic and physiologic concepts. The treatment of the patient who does not have an accurate diagnosis may prove to be psychologically dangerous. Physical therapy applied as a nonspecific therapeutic measure is apt to yield mediocre results. Once treatment is begun, both the doctor and patient concur in the presence of disease and, hence of disability. Failure of the patient to improve or ultimately be cured may become embarrassing and inexplicable. Resolution of every doubt concerning a patient, particularly when there is no evidence of disability, is not necessary; it is usually time-consuming and frequently impossible. In the military service the patient must be judged on the objective clinical findings rather than on purely subjective complaints. There is no reason in the service to meet a subjective complaint, which is unsupported by demonstrable objective findings or a detectable organic cause, by prescribing a physical therapy thermal treatment, the "laying on of hands" or by excusing the patient from duty. The "laying on of hands" by the physical therapist in such cases may not result in the patient's improvement.

Our civilization assumes that one can accept realism without undue disintegration of his character and spirit. The patient with a chronic disease in whom improvement cannot be expected should be told, rather than be given long-continued, nonbeneficial physical therapy. Physical therapeutic modalities such as heat, diathermy, and the personal service of massage in chronic diseases must be viewed critically both as to the need for such treatment and to the beneficial effects to be derived therefrom.

The military physical therapist will find that active measures of treatment correspond to the military mission and the average young age of the patient. Active exercises and conditioning will do the most for the patient who is convalescing from an injury or or operation, and will prove successful for many chronic conditions presently treated with heat, massage, or diathermy. The physical therapist and the physician must remember that some conditions, such as limited joint motion, will improve slowly by natural forces, and little is gained by physical therapy.

SUMMARY

Physical therapy is an auxiliary to the art and practice of medicine and should be practiced under a physician's supervision, particularly when it is the major treatment given the patient. The diagnosis must be confirmed before treatment is started with physical therapy. The measures applied must be realistic and of dynamic character, and the patient's progress should be followed by the physician and physical therapist. The physician-physical therapist relationship is one of mutual exchange of thought and leads to mutual comprehension of the therapeutic goal and the therapeutic measures necessary for its attainment.

It has been only within the past few years that statistics indicate a significant advance in the survival rate of patients with gastric carcinoma. As surgery has advanced, undoubtedly many cases previously considered inoperable have responded more successfully to radical surgery. However, the over-all survival rate in unselected patients is still no greater than 10 percent at most. A cure of cancer of the stomach is achieved very infrequently.

—W. ROSS MORRIS, M. D.
in the *American Journal of Surgery*

ASSORTED USES FOR PLASTIC TEETH

FRANCIS W. SHAFFER, *Major, DC, USA*

SINCE the advent of acrylic (plastic) teeth many uses have been made of them which increased their versatility. Such teeth are not only used in full and partial denture prostheses, but also in crown and bridge prostheses. Because the material is easily shaped and worked with minimal effort, it has been a boon to dentists and dental laboratories everywhere. Some of the major uses for acrylic teeth are: acrylic jackets; small space pontics in full-casting procedures; lingual pontics for acrylic fixed bridges; acrylic-faced fixed bridges; sanitary pontics for posterior fixed bridges; tube teeth for castings and unilateral partial dentures; and anterior tube teeth instead of porcelain facings.

Satisfactory acrylic jackets can be made by trimming off the lingual surface of an acrylic tooth and placing the tooth on a jacket preparation die, and rewaxing a new lingual surface. This jacket is removed from the die and invested in dental stone. After the wax is melted from the acrylic facing, it is replaced by tooth-shade acrylic and the jacket is processed. The finishing and polishing is the same for any other plastic material.

In full casting (gold or chrome-cobalt) procedures a small acrylic bicuspid or molar tooth can be placed in the wax pattern on the refractory model and left there in toto. When the wax pattern has been burned out, the acrylic tooth is burned out as well. The resulting casting has a very nice shaped tooth in metal, instead of a poorly defined slug of metal.

Acrylic bridges can be made with a solid lingual area of metal by using the lingual surface of an acrylic tooth as the pontic. The labial area must first be trimmed off the tooth and the lingual area scooped out for later retention of the tooth-shade acrylic. The resulting plastic shell is invested in dental stone and burned out and cast in gold. It is then soldered to the abutment 3/4 crown. Tooth-shade acrylic is packed into the metal cast plastic lingual pontic.

For acrylic-faced bridges, the process is the same as for acrylic jackets. After the lingual surface has been trimmed off, the

From the Central Dental Laboratory, 2d Medical Detachment, U. S. Army.

acrylic tooth, or teeth, are placed against the metal connector of the bridge and the lingual area rewaxed. After the plastic has been processed it is then trimmed and polished.

At times it is difficult for some technicians to carve posterior teeth. The acrylic molar tooth saves time and effort in such instances. An acrylic molar tooth is used entirely, except the diatoric area is waxed to the contour of the sanitary bridge pontic. It is then invested, cast, and soldered to the two abutment crowns.

Tube teeth are easily made by cutting a hole in the center of an acrylic tooth and placing it in the wax pattern. A center post for retention is waxed directly to the pattern through the hole in the tooth. After the tooth is removed, the pattern is cast in the usual manner. By means of either quick-cure acrylic or crown and bridge cement, the plastic tooth is fixed permanently to the metal framework.

In the anterior areas of the mouth where a porcelain facing would be too small, or the bite too closed, any anterior plastic tooth can be prepared with satisfactory results in the same manner as the tube tooth.

Acrylic plastic teeth have a definite place in prosthetic procedures despite their known deficiencies. As time goes on, more and more uses will be found for these teeth in dentistry to the common benefit of the patient and the dentist.

Blood Vessel Surgery

There is probably no field of surgery in which greater advances have been made in recent years than that of blood vessel surgery. Great strides have been made since Kocher stated that the surgeon who touched the heart should lose the respect of his colleagues. Today cardiac and major blood vessel surgery are almost as commonplace as an appendectomy was in the nineteen hundreds.

The newer cardiac operations and surgical procedures on the major peripheral arteries and the portal system have been made possible only by rigorous and prolonged training in the experimental laboratory. The vascular surgeon of today must of necessity be a physiologist and an experimentalist as well as a surgeon.

—ALTON OCHSNER, M. D.
in the *Surgical Clinics of North America*

USE OF THE IBM IN NEUROPSYCHIATRIC CASE STUDY

JOHN C. MEBANE, *Major, USAF (MC)*

A FILING system which gives ready access to illustrative case material and provides for adequate cross-reference studies has been developed for the department of neuropsychiatry of this school by the use of International Business Machines punch cards. The task of adapting the data desired to the operations of the machine, and the desire to keep "paper work" to a minimum required several revisions before a workable system was devised. Because many clinicians may be interested in this problem, I believe that publication of this report system may be of general interest.

A clinical form (fig. 1) is completed for each patient who is referred to the department for study and teaching purposes. This is accomplished merely by circling the appropriate number or numbers under each of the 26 headings on the form. This particular form is designed to record data concerning the problems of flying personnel. The diagnostic terms and numbers used are from the Joint Armed Forces Statistical Classification and Basic Diagnostic Nomenclature. Certain items which are difficult to qualify, *e. g.*, genetics, dynamics, and mechanisms of defense, require careful evaluation before submitting them for statistical analysis.

Upon completion of the clinical form, the items circled are punched by an operator of an IBM machine directly onto a general purpose detail card. The item numbers on the clinical form denote the columns on the card which are to be used.

There are many practical uses of the filing system. A student medical officer may wish to listen to sound recordings or interviews with older officers who profess a fear of flying or, the department may wish to run a statistical survey of the number of medically ill persons studied on referral from the base stockade. Studies of psychosomatic conditions in various groups might also be made. These data can be obtained from appropriate cards selected by the machine.

From U. S. Air Force School of Aviation Medicine, Randolph Air Force Base, Tex.

NEUROPSYCHIATRY IBM DATA 55-59 DATE 60-80 NAME

1 AGE
(1) 0-20
(2) 21-25
(3) 26-30
(4) 31-35
(5) 36-45
(6) 46-55
(7) 55-over

2 SEX
(1) Male
(2) Female

3 RACE
(1) Caucasian
(2) Negro
(3) Latin Amer.
(4) Oriental
(5) Amer. Indian
(6) Other

4 PERSONNEL CATEGORY
(1) Airman
(2) Warrant Off.
(3) Officer
(4) Cadet
(5) Dependent
(6) Career Officer
(7) Career Airman

5 RANK
(1) A/B,2/Lt
(2) A/3C,1/Lt
(3) A/2C,Capt.
(4) A/1C,Maj.
(5) S/Sgt,L/C
(6) T/Sgt, Col.
(7) M/Sgt, Gen
(8) Cadet

6 OCCUPATION
(1) Flying
(2) Flying-support
(3) Other

7 SERVICE
(1) 0-3 mo.
(2) 4-6 mo.
(3) 7-12 mo.
(4) 13-24 mo.
(5) 25-36 mo.
(6) 37 mo.-6 yrs.
(7) 7-10 yrs.
(8) 11 or more yrs.

8 COMBAT
(1) Yes
(2) No
(3) Significant

9 MARITAL STATUS
(1) Single
(2) Married
(3) Divorced
(4) Remarried
(5) Widow/Widower
(6) Other

10 DEPENDENTS
(1) None
(2) Wife/Husband only
(3) 1-2 children
(4) 3 or more child.

11 APPEARANCE
(1) Relatively normal
(2) Pathological

12 SOURCE OF REFERRAL
(1) Direct
(2) Flight Surgeon
(3) Airman's Dispen.
(4) Attending Surg.
(5) Hospital
(6) Command
(7) Stockade
(8) Other Base

13-14, 15-16, 17-18 SYMPTOMS (Check 3)
(1) None
(2) Tension,irrit.
(3) Insomnia
(4) Fainting
(5) Fatigue, weakness
(6) Lack self-confid.
(7) Morbid fears
(8) Obsessions
(9) Suicidal preocc.
(10) Alcoholism
(11) Hallucinations
(12) Delusions
(13) Headache
(14) Backache
(15) Upper GI
(16) Lower GI
(17) Cardiovascular Symptoms
(18) GU Symptoms
(19) Convulsions
(20) Other seizures
(21) Neurol symptoms, unspecif.
(22) Fear flying, verbalized
(23) Fear flying, not verb.
(24) Motion sickness
(25) Intolerance to G-forces
(26) Visual disturbances
(27) Other spec. sense disturb.
(28) Unwillingness to serve
(29) Disciplinary difficulty
(X0) Other

19-20, 21-22, 23-24 DEVELOPMENT (Check 3)
(1) Birth injury
(2) Feeding difficul
(3) GI trouble
(4) Stuttering
(5) Nailbiting
(6) Fainting
(7) Convulsions
(8) Enuresis
(9) Special fears
(10) Nightmares
(11) Temper tantrums
(12) Periodic headaches
(13) Behavior disorder
(14) Poor health
(15) Similar to present complaint

25, 26, 27 GENETICS (Check 3)
(1) Broken home
(2) Deprivation
(3) Overprotection
(4) Parental instability
(5) Sibling rivalry
(6) Oedipal problem
(7) Traumatic sex experience

Figure 1A. Front of form used to record data for transfer to IBM card.

I B M DATA (Continued)

28 PREDISPOSITION
(1) None
(2) Mild
(3) Moderate
(4) Marked

29,30,31 STRESS (Check 3)
(1) None
(2) Change in situation
(3) Family difficulty
(4) Overwork
(5) Loss of stab. figure
(6) Injury/Illness
(7) Interpersonal diff.

32,33,34 DYNAMICS (Check 3)
(1) Hostility
(2) Dependency
(3) Sexuality
(4) Authority
(5) Guilt
(6) Prestige
(7) Other

35-36,37-38,39-40 MECHANISMS (Check 3)
(1) Sublimation
(2) Rationalization
(3) Compensation
(4) Identification
(5) Displacement
(6) Reaction-format.
(7) Denial
(8) Suppression
(9) Projection
(10) Fantasy
(11) Regression
(12) Somatization
(13) Other

41 PSYCHOL. EVAL
(1) Accomplished
(2) Not accomplished

42 ELECTROENCEPHALOGRAM
(1) Not accomplished
(2) Normal
(3) Abnormal
(4) Significant pattern

43 INTERVIEW SOUND-RECORDED (1) Yes (2) No

44-47,48-51 DIAGNOSIS - PRIMARY & SECONDARY (Check 2)

(0001) None
(3000) Schiz, simple
(3001) Schiz, heb.
(3002) Schiz, cat.
(3003) Schiz, par.
(3005) Schiz, latent
(3007) Schiz, n.e.c.
(3010) Manic-depressive
(3011) Psychotic depr
(3012) Involutional melan.
(3015) Paranoia
(3018) Paranoid state
(3040) Organic psychosis
(3041) Organic non-psychotic disturbance
(3100) Anxiety reaction
(3112) Conversion reaction
(3110) Dissociative react.
(3120) Phobic reaction
(3130) Obsess-compuls.r.
(3140) Neurotic depr.r.
(3150) Psy.cardiovasc.r.
(3160) Psy. GI reaction
(3170) Psy. resp. reaction
(3171) Psy. GU reaction
(3173) Psy. skin react.
(3174) Psy.musc-skel.r.
(3175) Psy.asthenic r.
(3179) Psy.r.,other sys.
(3180) Hypochondriasis
(3200) Schizoid person.
(3201) Paranoid person.
(3202) Cyclothymic pers.
(3203) Inadequate pers.
(3204) Antisocial pers.
(3205) Asocial personality
(3206) Sexual deviate
(3210) Emotional instability r.
(3211) Passive-dependency r.
(3212) Passive-aggressive r.
(3213) Aggressive reaction
(3215) Immat. w/symp habit r.
(3221) Alcoholism
(3230) Addiction
(3240) Prim. childhood behavior
(3250) Mental defic.,prim.
(3260) Mental defic.,sec.
(3270) Specific learning defect
(3273) Combat exhaustion
(3274) Situational maladjustment
(8721) Motion sickness
(7820) Syncope
(3539) Epilepsy, n.e.c.

52 DIAGNOSIS-TERTIARY
(1) Assoc.disease of GI sys.
(2) Respiratory system
(3) Cardiovascular system
(4) Skin
(5) Endocrine-metabolic
(6) Musculo-skeletal
(7) Genito-urinary
(8) Special sense
(9) Neurological system

53 IMPAIRMENT
(1) None
(2) Temp.unfit flying
(3) Perm.unfit flying
(4) Mild Degree
(5) Moderate
(6) Marked

54 DISPOSITION
(1) Duty
(2) DNIF
(3) Hospitalized
(4) Administrative action
(5) Psychotherapy
(6) Other

Name of Examining Physician

Figure 1B. Back of form.

PUBLICATIONS BY OFFICERS OF THE MEDICAL SERVICES OF THE ARMED FORCES

Addison, V. E., Second Lt., USAF (WMSC); Tuttle, W. W.; Daum, K.; and Larsen, R.: Effect of amount and type of protein in breakfasts on blood sugar levels. *J. Am. Dietet. A.* 29: 674-677, July 1953.

Amspacher, W. H., Col., MC, USA, and Curreri, A. R.: Use of dextran in control of shock resulting from war wounds. *A. M. A. Arch. Surg.* 66: 730-740, June 1953.

Armory, H. I., Col., MC, USA, and Sieber, P. E., Maj., MC, USA: Supraclavicular shadows in chest film interpretation. *Radiology* 61: 8-12, July 1953.

Armstrong, G. E., Maj. Gen., MC, USA: Physician and military medicine. *Rocky Mountain M. J.* 50: 649-652; 662-665, Aug. 1953.

Blumberg, J. M., Col., MC, USA, and Ober, W. B.: Carcinoma in situ of cervix; recurrence in vaginal vault. *Am. J. Obst. & Gynec.* 66: 421-425, Aug. 1953.

Brady, L. W., Lt., MC, USN; Cooper, D. Y., Lt., MC, USNR; Colodzin, M., Ensign, MSC, USN; McClenathan, J. E., Lt., MC, USN; King, E. R., Comdr., MC, USN; and Williams, R., Lt., MC, USNR: Blood volume studies in normal humans. *Surg., Gynec. & Obst.* 97: 25-32, July 1953.

Brav, E. A., Col., MC, USA, and Blair, J. D., Col., MC, USA: Reconstruction procedures for forearm bone defects. *Am. J. Surg.* 86: 139-144, Aug. 1953.

Brock, L. L., Capt., USAF (MC), and Siegel, A. C., Capt., MC, USAR: Studies on prevention of rheumatic fever; effect of time of initiation of treatment of streptococcal infections on immune response of host. *J. Clin. Investigation* 32: 630-632, July 1953.

Canty, T. J., Capt., MC, USN, and Sharf, A. G., Lt. (jg), MC, USN: Frostbite resulting in amputations. *Ann. Surg.* 138: 65-72, July 1953.

Crosby, W. H., Lt. Col., MC, USA: Paroxysmal nocturnal hemoglobinuria; plasma factors of hemolytic system. *Blood* 8: 444-458, May 1953.

DeCoursey, E., Brig. Gen., MC, USA: Ionizing radiation injury. *Quart. Phi Beta Pi* 50: 54-57, May 1953.

Dodd, G. D., Capt., USAF (MC); Fishler, J. S., Capt., USAF (MC); and Park, O. K., Maj., USAF (MC): Hyperplasia of Brunner's glands. *Radiology* 60: 814-821, June 1953.

Douglas, B. L., Lt., DC, USNR: Mixed tumors of palate. *New York State Dent. J.* 19: 293-296, June-July 1953.

Enos, W. F., Maj., MC, USA; Holmes, R. H., Lt. Col., MC, USA; and Beyer, J., Capt., MC, AUS: Coronary disease among United States soldiers killed in action in Korea; preliminary report. *J. A. M. A.* 152: 1090-1093, July 18, 1953.

Forsee, J. H., Col., MC, USA; Puckett, T. F., Maj., MC, USA; and Hagman, F. E., Col., MC, USA: Surgical considerations in focalized pulmonary histoplasmosis. *J. Thoracic Surg.* 26: 131-139, Aug. 1953.

Furth, F. W., First Lt., MC, USA; Coulter, M. P.; Miller, R. W., Capt., MC, USA; Howland, J. W.; and Swisher, S. N.: Treatment of acute radiation syndrome in dogs with aureomycin and whole blood. *J. Lab. & Clin. Med.* 41: 918-928, June 1953.

Gochenour, W. S., Jr., Maj., VC, USA: Laboratory diagnosis of leptospiral infections. *Bull. New York Acad. Med.* 29: 648-649, Aug. 1953.

Jahnke, E. J., Jr., Maj., USAF (MC), and Seeley, S. F., Brig. Gen., MC, USA: Acute vascular injuries in Korean war. *Ann. Surg.* 138: 158-177, Aug. 1953.

King, J. D., Comdr., MC, USN, and Harris, J. H., Lt., MC, USN: War wounds of chest among marine and naval casualties in Korea. *Surg., Gynec. & Obst.* 97: 199-212, Aug. 1953.

Lewis, R. B., Lt. Col., USAF (MC), and Moen, P. W., Capt., USAF (MC): Effect of rutin, hydergine, and nicotine on extent of gangrene following experimental local cold injury. *Exper. Med. & Surg.* 11: 9-20, 1953.

Lewis, R. B., Lt. Col., USAF (MC), and Moen, P. W., Capt., USAF (MC): Further investigations on use of heparin in treatment of experimental frostbite. *Surg., Gynec. & Obst.* 97: 59-66, July 1953.

Meyer, A. F., Jr., Lt. Col., USAF (MSC); Peterson, R. L., Maj., USAF (MSC); and Bell, H. E., Second Lt., USAF (MSC): Noise as factor in health. *Am. J. Pub. Health* 43: 978-988, Aug. 1953.

Moser, M., Capt., USAF (MC); Syner, J., Capt., MC, USA; Malitz, S., Capt., MC, USA; and Mattingly, T. W., Col., MC, USA: Acute psychosis as complication of hydralazine therapy in essential hypertension. *J. A. M. A.* 152: 1329-1331, Aug. 1, 1953.

Moser, M., Capt., USAF (MC); Watkins, D., Lt. Comdr., MC, USN; Morris, N., Comdr., MC, USN; Prandoni, A. G.; and Mattingly, T. W., Col., MC, USA: Effect of dibenzyline on skin temperature, peripheral blood flow, and vasomotor responses in normal patients and patients with increased vasoconstrictor tone. *Circulation* 8: 224-231, Aug. 1953.

Nelson, R. S., Col., MC, USA: Sarcoidosis in the Armed Forces. *Am. J. M. Sc.* 226: 131-138, Aug. 1953.

Okulicz, S. J., Comdr., MC, USN, and Marshall, V. F.: Nephrectomy and hypertension; experience in one urologic clinic. *Am. J. Surg.* 86: 45-49, July 1953.

Palmer, E. D., Lt. Col., MC, USA, and Brick, I. B.: Sources of upper gastrointestinal hemorrhage in cirrhotic patients with esophageal varices. *New England J. Med.* 248: 1057-1058, June 18, 1953.

Palmer, E. D., Lt. Col., MC, USA, and Buchanan, D. P., Capt., MC, USA: On the ischemic basis of "peptic" ulcer; historical definition of present status. *Ann. Int. Med.* 38: 1187-1205, June 1953.

Palmer, E. D., Lt. Col., MC, USA: Attempt to localize normal esophagogastric junction. *Radiology* 60: 825-831, June 1953.

Pate, J. W., Lt., MC, USNR, and Sawyer, P. N., Lt., MC, USNR: Freeze-dried aortic grafts; preliminary report of experimental evaluation. *Am. J. Surg.* 86: 3-13, July 1953.

Pate, J. W., Lt., MC, USNR, and Sawyer, P. N., Lt., MC, USNR: Failure of freeze-dried esophageal grafts. *Am. J. Surg.* 86: 152-153, Aug. 1953.

Pitts, F. W., Capt., MC, USA; Tempel, C. W., Col., MC, USA; Miller, F. L., Maj., MC, USA; Sands, J. H., Capt., MC, USA; Fitzpatrick, M. J., Capt., MC, USA; and Weiser, O.: Isoniazid and streptomycin in treatment of pulmonary tuberculosis; preliminary report. *J. A. M. A.* 152: 886-890, July 4, 1953.

Pollock, B. E., Col., MC, USA, and Pruitt, F. W., Col., MC, USA: Oral therapy with mercumatilin (cumertilin), a new mercurial diuretic. *Am. J. M. Sc.* 226: 172-176, Aug. 1953.

Pruitt, F. W., Col., MC, USA, and Cleve, E. A., Col., MC, USA: Epidemic hemorrhagic fever. *Am. J. M. Sc.* 225: 660-668, June 1953.

Reiss, E., Capt., MC, USA; Stirman, J. A., Lt., MC, USA; Artz, C. P., Maj., MC, USA; Davis, J. H., Capt., MC, USA; and Amspacher, W. H., Col., MC, USA: Fluid and electrolyte balance in burns. *J. A. M. A.* 152: 1309-1313, Aug. 1, 1953.

Rieger, I. T., Lt., MC, USNR, and Fuller, R. H., Comdr., MC, USN: Spermatic granuloma of epididymis; case report. *J. Urol.* 69: 819-822, June 1953.

Riva, H. L., Lt. Col., MC, USA; Carpenter, R. J., Capt., MC, USA; and O'Grady, J. W., Capt., MC, USA: Pregnancy associated with multiple sclerosis. *Am. J. Obst. & Gynec.* 66: 403-408, Aug. 1953.

Roque, F. T., Maj., MC, USA; Ludwick, R. W.; and Bell, J. C., Capt., MC, USA: Pulmonary paragonimiasis; review with case reports from Korea and Philippines. *Ann. Int. Med.* 38: 1206-1221, June 1953.

Roth, L. G., Lt., MC, USN: Outlet pelvimetry and symphysis-biparietal and sacral-biparietal diameters. *Surg., Gynec. & Obst.* 96: 704-706, June 1953.

Roth, L. G., Lt., MC, USN: Pelvic study; sacrum, its significance in obstetrics. *Am. J. Obst. & Gynec.* 66: 62-66, July 1953.

Roth, L. G., Lt., MC, USN: Pelvic study; complete pelvimetry, including use of proposed new system of pelvic profile description. *Am. J. Obst. & Gynec.* 66: 302-311, Aug. 1953.

Rozenfeld, I. H., Capt., USAF (MC): Methemoglobinemia resulting from absorption of sodium nitrite; report of case. *J. A. M. A.* 152: 706, June 20, 1953.

Saltzman, A., Capt., MC, USAR, and Caraway, W. T.: Cinnamic acid as test substance in evaluation of liver function. *J. Clin. Investigation* 32: 711-719, Aug. 1953.

Schreiner, G. E., Capt., MC, USA; Smith, L. H., Jr., Capt., MC, USA; and Kyle, L. H.: Renal hyperchloremic acidosis; familial occurrence of nephrocalcinosis with hyperchloremia and low serum bicarbonate. *Am. J. Med.* 15: 122-129, July 1953.

Shaw, E. W., Capt., USAF (MC), and Niccoli, J. Z.: Hypervitaminosis A: report of case in an adult male. *Ann. Int. Med.* 39: 131-134, July 1953.

Southard, S. C., Capt., MC, AUS; Watson, W. B., Maj., MC, USA; and Capute, A. J., Capt., MC, USA: Salmonella montevideo infection following use of powdered egg yolk. *J. A. M. A.* 152: 1432-1453, Aug. 8, 1953.

Storey, C. F., Capt., MC, USN; Grant, R. A., Comdr., MC, USN; and Rothmann, B. F., Lt., MC, USNR: Coin lesions of lung. *Surg., Gynec. & Obst.* 97: 95-104, July 1953.

Tarrow, A. B., Lt. Col., USAF (MC), and Pulaski, E. J., Lt. Col., MC, USA: Reactions in man from infusion with dextran. *Anesthesiology* 14: 359-363, July 1953.

Tempel, C. W., Col., MC, USA; Pitts, F. W., Capt., MC, USA; and Dye, W. E., Capt., MSC, USA: Antimicrobial therapy of pulmonary tuberculosis: review of six years' experience at Fitzsimons Army Hospital. *Am. Int. Med.* 39: 61-73, July 1953.

Vaughan, W. H., Col., MC, USA, and Segal, G., First Lt., MC, USA: Tarsal coalition, with special reference to roentgenographic interpretation. *Radiology* 60: 855-863, June 1953.

Wagner, B. M., Capt., MC, USA; Morse, W. H., MC, USA; and Kuhns, D. M., MC, USA: Recent studies on nonspecific urethritis. *Am. J. Pub. Health* 43: 853-859, July 1953.

Walker, S. H., Maj., MC, USA: Failure of antibiotic therapy in infectious mononucleosis. *Am. J. M. Sc.* 226: 65-72, July 1953.

Yager, R. H., Lt. Col., VC, USA: Epidemiology of leptospiroses. *Bull. New York Acad. Med.* 29: 650-651, Aug. 1953.

Young, W. G., Jr., Lt., MC, USNR: Jejunal polyps and intussusception associated with abnormal melanin pigmentation. *Surgery* 34: 46-50, July 1953.

Regular Medical Corps Officers Certified by Specialty Boards

Beginning in this issue the Journal *will publish each month the names of the regular officers of the Medical Corps of the Army, Navy, and Air Force who have been certified by one or more of the various specialty boards approved by the American Medical Association.*—The Editors

The American Board of Ophthalmology

Established in 1917, the American Board of Ophthalmology is the oldest of the specialty boards. According to current information from the Offices of the Surgeons General of the three military departments, the following 74 regular officers have been certified in this specialty:

Benjamin N. Ahl, *Capt., USN*
Arnold A. Albright, *Col., USA*
Harry D. Arnold, Jr., *Maj., USAF*
Marshall B. Atkinson, *Maj., USA*
Thomas E. Atkinson, Jr., *Lt. Comdr., USN*

Harry Banoff, *Capt., USA*
Otto C. Baumgarten, *Comdr., USN*
William L. Berkley, *Capt., USN*
John H. Bickerton, Jr., *Maj., USAF*
Berna T. Bowers, *Col., USA*
Jack H. Bristow, *Col., USAF*
James W. Brown, *Col., USAF*
Henry G. Bullwinkel, *Capt., USN*
Victor A. Byrnes, *Col., USAF*

Frederick R. Carriker, *Capt., USA*
Jules B. Chapman, *Lt. Col., USAF*
Oran W. Chenault, *Capt., USN*
Willard H. Cleveland, *Lt. Col., USA*
John F. Connole, Jr., *Maj., USA*

John E. Edwards, *Maj., USA*

Richard S. Fixott, *Col., USAF*
Nathaniel E. Fowler, *Lt., USN*
James L. Fuelling, *Comdr., USN*
Shirley A. Fuhring, *Comdr., USN*

Robert D. Gilliam, *Lt. Comdr., USN*
Peter J. Giotta, *Comdr., USN*
Orville M. Graves, Jr., *Lt., USN*
Joseph J. Gulyash, *Lt. Col., USAF*

Jack H. Hall, *Maj., USAF*
Frederick Harbert, *Capt., USN*
Anselm C. Hohn, *Capt., USN*
Kenneth E. Hudson, *Lt. Col., USA*
Forrest E. Hull, *Lt. Col., USA*
Edward A. Hynes, *Comdr., USN*

Aubrey L. Jennings, *Col., USAF*
Joseph M. Jordan, *Comdr., USN*
Lewis G. Jordan, *Capt., USN*

Richard L. Kasper, *Capt., USA*
John H. King, Jr., *Col., USA*
Edward Kulczycki, *Comdr., USN*

George E. Lathrop, *Lt. Col., USA*
Robert N. Lehman, *Lt. Col., USA*
Austin Lowrey, Jr., *Col., USA*
Arthur W. Loy, *Capt., USN*

Karl D. MacMillan, *Col., USA*
John J. Maloney, *Lt. Col., USA*
John T. Martin, *Lt. Col., USA*
Earl Maxwell, *Brig. Gen., USAF*
Worthy W. McKinney, *Maj., USA*
Jay F. Miller, *Capt., USN*
Dawson A. Mills, *Comdr., USN*

Rudolph P. Nadbath, *Lt. Comdr., USN*

Samuel H. Oliver, *Comdr., USN*
Nelse O. Olson, *Comdr., USN*
Thomas L. Ozment, *Lt. Col., USA*

This is the first in a series. The names of officers certified in otolaryngology will be published in the November issue.

Karl J. Palmberg, *Comdr., USN*
Roy R. Powell, *Capt., USN*

Emmett J. Ryan, *Capt., USA*
Stephen J. Ryan, *Capt., USN*

Lewis Schachne, *Lt., USN*
Frank E. Schwartz, *Maj., USA*
Horace W. Shreck, *Lt. Col., USA*
William T. Sichi, *Col., USA*
Jaroud B. Smith, Jr., *Comdr., USN*
William L. Smith, *Lt. Comdr., USN*

Bagher Sotoodeh, *Maj., USA*
William L. Spaulding, *Col., USA*
Richard U. Stern, *Maj., USA*
Jesse H. Suitor, *Comdr., USN*
Clifford A. Swanson, *Rear Adm., USN*
Leo S. Szakalun, *Maj., USA*

George L. Tabor, Jr., *Comdr., USN*

Anthony J. Vadala, *Col., USA*

Francis X. Weixel, *Maj., USAF*

One of the most common complaints of persons with low back pain is inability to sit in comfort, with difficulty in straightening the back on rising. This is particularly noticeable after long sitting in a lounge chair, an automobile, or a theater seat, all of which are supposed to be comfortable. This common complaint must represent some fundamental defect in our conception of the correct sitting position and in the design of chairs and seats, for only young persons with elastic ligaments and no back pain can tolerate sitting for long in the type of seats commonly designed. Older persons, who use chairs more often, do not have this elasticity and often sit in discomfort.

—J. JAY KEEGAN, M. D.
in the *Journal of Bone and Joint Surgery*

At present the cumulative effect of acoustic trauma is unconfirmed by experimental data. The problem basically needs further definition. By some it is interpreted as meaning that once a subject has suffered hearing damage he becomes more sensitive to further damage by noise of lesser intensity than when his hearing was normal. To others, cumulative effect means that although a certain noise may be insufficiently loud to produce immediate hearing damage, if the subject is exposed to the noise repeatedly or for a sufficient length of time the subclinical hearing loss will accumulate and become manifest on the audiogram. Each of these interpretations necessitates considerably more investigation and consideration.

—JOSEPH SATALOFF, M. D.
in *A. M. A. Archives of Otolaryngology*

BOOK REVIEWS

Operative Neurosurgery, With Emphasis on Procedures in Trauma, by *Elisha Stephens Gurdjian*, M. D., Professor of Neurosurgery, Wayne University College of Medicine; Chief, University Neurosurgical Service, Grace Hospital, Detroit, Mich., and *John E. Webster*, M. D., Assistant Professor of Surgery, Wayne University College of Medicine; University Neurosurgical Service, Grace Hospital, Detroit, Mich. 422 pages; illustrated. The Williams & Wilkins Co., Baltimore, Md., publishers, 1952. Price $10.

This book is unique for its style, illustrations, and relatively low cost. The authors have directed their efforts toward presenting standard procedures in neurologic surgery under four headings: head, spine, sympathetic nervous system, and peripheral nerves. Those procedures done in a special or abbreviated manner by neurosurgeons are not described. The book is, therefore, valuable in presenting the technics used in the senior author's clinics. The illustrations are multiple-action and multiple-plane drawings and for the most part, face the page of the text giving the description of the procedures.

Gurdjian and his associates have done much experimental work in head injury mechanisms. The results of their studies are reflected in the chapters on head and back injuries. General surgeons, residents, and others who initially see the patient with such injuries will appreciate the detailed instructions given. Each chapter contains an interesting and detailed historical account that assists in understanding the development of present-day surgical technic. The bibliographies are very extensive and furnish source material for a more detailed study. Interspersed throughout the book are short anatomical summaries of neurosurgical approaches to structures.

This book has a style of its own and presents a great deal of pertinent information concisely and accurately. There is oversimplication in some instances, and the presentation of some ideas are open to discussion. The chapter on cerebral aneurysms is very brief; more information on surgical approaches to the various vessels and the treatment of complications due to the ligation of main vessels would be helpful. In cervical injuries, laminectomy should be performed when it appears from roentgenographic study that a fractured bone is pressing into the spinal canal; skeletal traction alone should not be com-

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pletely relied on. It was not the authors' intention to describe numerous approaches to the same regions, however, and other technical criticism is of a minor nature and does not detract from the value of the book.

This volume should be in the libraries of our military hospitals, neurosurgeons, general surgeons, and others responsible for emergency treatment of head, back, and peripheral nerve injuries will find it a valuable reference and source book.

—Lt. Col. R. C. Greenwood, MC, USA

Annual Review of Medicine, by *Windsor C. Cutting*, Editor, Stanford University School of Medicine, and *Henry W. Newman*, Associate Editor, Stanford University School of Medicine. Volume 4. 452 pages. Annual Reviews, Inc., Stanford, Calif., publishers, 1953. Price $6.

The editors have selected internationally known authors to compile a review of the publications of the past year in their particular field of medicine. The articles selected for analysis are new, unusual, or outstanding contributions to the subject. Special attention is given to the latest developments in the treatment of diseases, as well as to a critical analysis of recent scientific work in each specialty. An extensive bibliography follows each chapter. The subjects are presented by systems and include chapters on infectious diseases, radiology, obstetrics, and plastic surgery. The authors are particularly adept in bridging the continuity of the various articles, thus producing an extremely interesting presentation and one which is timely and informative. They can be commended for their conservative views, their constructive criticism, and the accuracy of their statements. This book is an excellent digest and a useful reference for all physicians, but particularly for those who do not have an opportunity to keep up with the current medical literature.—*Lt. Col. F. A. Goss, USAF (MC)*

Psychiatric Dictionary, With Encyclopedic Treatment of Modern Terms, by *Leland E. Hinsie*, M. D., Formerly Professor of Psychiatry, College of Physicians and Surgeons, Columbia University, New York; Assistant Director, New York State Psychiatric Institute and Hospital; and *Jacob Shatzky*, Ph. D., Research Librarian, New York State Psychiatric Institute and Hospital. 2d edition with supplement. 781 pages. Oxford University Press, New York, N. Y., publishers, 1953. Price $15.

This book is without a peer in its particular field because it is the only relatively complete dictionary which covers in encyclopedic fashion the various terms and concepts of all the more acceptable schools of psychiatry. Attention is also given to allied fields such as clinical neurology, constitutional medicine, mental deficiency, the social services, genetics, and eugenics. It fills a vital need in a field where semantic confusion and misunderstanding is the rule rather than the exception. The spelling, pronunciation, and derivation of terms is given and,

most important, the source of the definition in most instances. For the beginner or resident in psychiatry it is a valuable and necessary reference source, and provides current information for the busy practitioner of psychiatry.

Publication of the second edition in two parts is economical to those already possessing the first part, and also allows a quick perusal of all the more recent terms in one compact location. The definitions are simple, concise, and easy to understand. To the original 6,113, 902 new definitions have been added and the same careful attention to accuracy and detail has been maintained. Ownership of this publication is heartily recommended, and it should find its rightful place alongside the standard medical dictionary of any practicing psychiatrist or of anyone working in an allied field.

—*Lt. Col. R. R. Cameron, MC, USA*

The Wechsler-Bellevue Scales, a Guide for Counselors, by *C. H. Patterson,* Veterans Administration Center, Fort Snelling, St. Paul, Minn. American Lecture Series, Publication Number 148, A Monograph in The Bannerstone Division of American Lectures in Psychology, edited by *Molly Harrower,* Ph. D., Research and Consulting Psychologist, New York, N. Y. 146 pages. Charles C Thomas, Publisher, Springfield, Ill., 1953. Price $3.75.

The book represents a revision and expansion of material prepared in 1948 in mimeographed form by the Veterans Administration Regional Office, Minneapolis, Minn., under the title *Using the Wechsler-Bellevue Scales in Counseling.* The volume consists of a recapitulation of the researches with the Wechsler-Bellevue test in clinical diagnosis, measurement of mental deterioration, aptitude measurement, and short forms of the test. In each case there is a discussion by the author followed by a summary and conclusion. Throughout, the emphasis is on the statistical findings and, generally, the conclusions point out that the test is valueless or limited in the areas discussed.

If psychologic instruments had value only in terms and to the extent described by statistical research studies, we would have to discard our most valuable tools, including the Rorschach and other key technics in clinical use. The persistent negative conclusions toward which the quoted studies lead the author are more likely to confuse the counselor or clinical psychologist than guide him. Except for some constructive ideas on the use of the short form of the test and a table showing correlations between the Wechsler-Bellevue and other intelligence tests, there is very little useful material offered which may be applied in a counseling situation. The book is more than a disappointment. Its publication, in present form, is unfortunate as the conclusions fail to take into account the clinical experience of those who have used the test successfully for differential

diagnosis. As "a guide for counselors" it is a misnomer, Actually, the book represents little more than a well-done review of the research literature.—*Maj. T. C. Kahn, USAF (MSC)*

The Psychopathic Delinquent and Criminal, by *George N. Thompson*, M. D., F. A. C. P., Associate Clinical Professor of Neurology and Psychiatry, School of Medicine, University of Southern California, Los Angeles, Calif.; Formerly, Chief of Psychiatric Service, Los Angeles County General Hospital; Psychiatric Consultant, Department of Corrections, State of California; Fellow of the American Psychiatric Association; Fellow of the American Academy of Neurology. 157 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1953.

This carefully thought-out and well-written book is a plea for more painstaking scientific evaluation and handling of the psychopathic criminal. Based on medicolegal experience over many years, the author proposes special methods of handling and treating these criminals in separate institutions. The need for such facilities is well known to the psychiatric profession. The "organic" basis for the psychopathology discussed is emphasized, but too little attention is paid to the current dynamic concepts in psychiatry. I do not believe that the author proves his thesis.

The format and printing of the book are excellent.

—*Comdr. F. H. Ocko, MC, USN*

Conduction Anesthesia, by *George P. Pitkin*, M. D., F. A. C. S., F. I. C. A., edited by *James L. Southworth*, M. D., F. A. C. S., Formerly Senior Surgeon, U. S. P. H. S.; Formerly Co-Director, Cardiovascular Clinic, Public Health Service Hospital, Baltimore, Md.; Attending Surgeon, East Tennessee Tuberculosis Hospital and East Tennessee Baptist Hospital, Knoxville, Tenn.; *Robert A. Hingson*, M. D., F. A. C. S., F. I. C. A., F. I. C. S., F. (Faculty of Anest.) R. C. S. (England), First Director Anesthesia, Women's Division (Philadelphia Lying-In-Hospital) of Pennsylvania Hospital; First Professor of Anesthesia, University of Tennessee School of Medicine; Formerly Senior Surgeon, U. S. P. H. S.; Formerly Associate Professor of Obstetrics, Johns Hopkins University; Professor of Anesthesia, Western Reserve University, Cleveland, Ohio; and *Winifred M. Pitkin*, M. A. (Oxon.), B. M., B. Ch. (Oxon.), M. R. C. S. (Eng.), L. R. C. P. (Long.), M. D., Assistant in Surgery to the late George P. Pitkin. 2d edition. 1,005 pages; 585 illustrations. J. B. Lippincott Co., Philadelphia, Pa., publishers, 1953. Price $22.50.

The second edition of this authoritative book has been thoroughly revised to keep pace with the tremendous progress made in the application of conduction anesthesia during the past decade. Pitkin's basic concepts still remain the foundation of the text, and there have been very few changes in the chapters he wrote. The section on pharmacology of local anesthetics has been brought up to date. New chapters on the vertebral canal and its contents, topical anesthesia, and complications of conduction anesthesia have been added. The chapters on spinal

anesthesia in the first edition have been condensed to a single chapter and almost completely rewritten. The most striking feature is the large number of excellent anatomic plates and illustrations. Many of the illustrations of anesthetic methods are accompanied by anatomic inserts showing the detail of needle approach, which should aid the beginner.

This book is the most complete and comprehensive single volume on conduction anesthesia in the current literature and is highly recommended to both anesthesiologists and surgeons.

—Comdr. J. G. Kurfees, MC, USN

Physiological and Therapeutic Effects of Corticotropin (ACTH) and Cortisone, by *Dwight J. Ingle,* B. S., M. S., Ph. D.; Senior Research Scientist (Physiologist), Research Laboratories, the Upjohn Company, Kalamazoo, Mich., and *Burton L. Baker,* B. A., M. S., Ph. D., Professor of Anatomy, University of Michigan Medical School, Ann Arbor, Mich. American Lecture Series, Publication No. 179, A Monograph in American Lectures in Metabolism, edited by *Paul György,* M. D., Department of Pediatrics, University of Pennsylvania School of Medicine, Philadelphia, Pa.; *Louis Leiter,* M. D., Division of Medicine, Montefiore Hospital, New York, N. Y.; and *S. O. Waife,* M. D., The Lilly Research Laboratories, Indianapolis, Ind. 172 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1953. Price $5.50.

This monograph is a concise review of the effects of corticotropin and cortisone, which meets a need of the student seeking illumination without reading voluminous literature on the subject. There is an excellent bibliography with key references. In addition to corticotropin and cortisone, attention is given to hydrocortisone and other biologically active steroid compounds of the adrenal cortex which are of therapeutic importance. The authors are authorities in the field and have sought the guidance of clinical investigators in preparing the chapters that review the therapeutic effects of these hormones.

The monograph deals with the history of the compounds, present concepts of the relationship between the anterior hypophysis and the adrenal cortex, electrolyte and water metabolism, circulation, functional changes in the nervous system, organic metabolism, growth, normal tissues, and normal and injured connective tissue. There are chapters devoted to general considerations of the clinical use of cortisone and corticotropin and to various uses in rheumatic, allergic, and connective tissue diseases, and those of the skin and eye, blood and blood-forming organs, and miscellaneous diseases, such as ulcerative colitis and regional enteritis. The undesirable effects of cortisone and corticotropin are reviewed. One chapter deals with adrenal cortical insufficiency in man, with reference to Addison's disease, ablation of the adrenal glands, anterior hypophyseal insufficiency, and endocrine dysfunctions. There is a final chapter devoted to the speculation on the nature of adrenal cortical

hormone action. The bibliography includes 324 references. There is no index, but the table of contents is adequate for reference.

This monograph serves as an easy reference for the physician and graduate student alike, and is recommended for Armed Forces medical libraries.—*Comdr. T. D. Cuttle, MC, USN*

Virus and Rickettsial Classification and Nomenclature, by *Sir MacFarlane Burnet, Ernst Mayr, L. M. Black, Francis O. Holmes, James Johnson, C. H. Andrewes, P. Limasset, Geoffrey W. Rake, Mark H. Adams, A. A. Bitancourt, Herald R. Cox, J. D. W. A. Coles, Cornelius B. Philip, G. H. Bergold, Edward A. Steinhaus, F. C. Bawden, K. F. Meyer, G. John Buddingh, W. McD. Hammon, Pierre Lépine,* and *Albert B. Sabin.* Originally published in Annals of the New York Academy of Sciences, Volume 56, Article 3, pages 381-622. Illustrated. The New York Academy of Sciences, New York, N. Y., publisher, 1953. Price $4.

In January 1952, the Section on Biology of the New York Academy of Sciences sponsored a meeting which dealt with the classification and nomenclature of virus and rickettsia. This publication by that organization contains the papers presented at the meeting. All of the known groups of viruses and rickettsia of importance in human disease and also certain groups significant to insects and plants are included in this volume. The contents consist of 31 individual papers, each by an outstanding authority on the subject, which present known information on the means for qualitatively and quantitatively characterizing virus and rickettsia.

The publication is a valuable up-to-date reference on the subject and should be an asset to the reference library of scientists interested in microbiology.

—*Lt. Col. F. L. Bauer, MC, USA*

The Roots of Psychotherapy, by *Carl A. Whitaker,* M. A., M. D., Professor of Psychiatry and Chairman of the Department of Psychiatry, Emory University School of Medicine, and *Thomas P. Malone,* M. A., Ph. D., Assistant Professor of Psychiatry and Director of Research, Department of Psychiatry, Emory University School of Medicine. 236 pages; illustrated. The Blakiston Co., New York, N. Y., publishers, 1953. Price $4.50.

Because of the varied approaches to psychotherapy and the different technics used, there has long been a need for a scientific formulation of the art of psychotherapy. This monograph proposes such a formulation. As a means of communicating with other workers in the field and as a stimulus for further refinement of a conceptual basis for psychotherapy, it is largely successful. Although some of the theories advocated and terminology used will be questioned by many psychotherapists, the monograph is stimulating and thought provoking, and will be useful in furthering research in and teaching psychotherapy. It is divided into three sections. The first section, entitled "Foundation,"

deals with the relationship of psychotherapy to general biology and includes chapters entitled "Research in Psychotherapy" and "The Community and Psychotherapy." The second section, "Process," presents a formulation of the essential phases and the dynamics of the psychotherapeutic relationship. The third section, "Techniques," contains some technics found useful in psychotherapy by the authors.

—Lt. Col. O. M. Weaver, MC, USA

Epidemics in Colonial America, by *John Duffy.* 274 pages; illustrated. Louisiana State University Press, Baton Rouge, La., publishers, 1953. Price $4.50.

Delving into all types of contemporary diaries, correspondence, journals, histories, descriptions, newspapers, and official records, the author has evolved a well-documented, comprehensive, historical summary which gives a vivid word picture of the epidemics of infectious diseases which plagued the American colonists during the seventeenth and eighteenth centuries. They include smallpox, diphtheria, scarlet fever, whooping cough, malaria, yellow fever, typhoid, and the dysenteries. During that period little was known about the causative agents, epidemiology, treatment or methods of prevention, and control of these infectious diseases nor were any reliable morbidity and mortality statistics recorded.

Those who remember only the brighter aspects of our country's early history may be shocked by the author's revelation of the extent to which the colonists suffered and died from these infectious diseases which, for the most part, have been either eradicated or are now preventable. This book makes one realize how recently these diseases were uncontrolled and also the marked progress in preventive medicine that has been made during the past 50 years. This book merits the attention of all who are interested in the health and welfare of mankind.

—Col. L. G. Thomas, MC, USA

Radiations and Living Cells, An Introduction to Radiation Biology, in Which the Action of Penetrating Radiations on the Living Cell is Described, with Special Reference to the Effect on Cell Division in Human Tissues, by *F. G. Spear,* M. D., M. A., D. M. R. E., Member, Scientific Staff, Medical Research Council, Strangeways Research Laboratory, Cambridge. 222 pages; illustrated. John Wiley & Sons, Inc., New York, N. Y., publishers, 1953. Price $3.50.

This small volume of 213 pages might be described as a primer dealing on the subject of radiobiology. The author has apparently done a great deal of experimental work with the effects of radiation on plants and experimental animals which he uses to illustrate many points.

The first half of the book is a review of normal cytology followed by a discussion of alteration in cell structure after ex-

posure to radiation. The balance of the book deals with the effects of radiation on each type of body tissue. There are discussions on such subjects as effects from whole body irradiation, effects of radiation on tumor cells, and finally a consideration of the various theories as to how penetrating rays produce their effects on living cells.

The book deals with the elements of a very timely subject and it is presented in an interesting manner. There are a number of black and white illustrations. The type is large and easy to read. It is recommended to the physicist interested in a career associated with a hospital, for the residents in radiology and in medicine, and for the senior student who may be interested in the field of radiation therapy. It may well be of interest to those who are concerned primarily in atomic defense who may wish to gain a broader knowledge of the agent with which they are dealing.—*Comdr. C. D. Burroughs, MC, USN*

The Founders of Neurology, One Hundred and Thirty-Three Biographical Sketches. Prepared for the Fourth International Neurological Congress in Paris, by Eighty-Four Authors. Edited by *Webb Haymaker*, M. D., Chief, Neuropathology Section, Armed Forces Institute of Pathology, Washington, D. C. With the bibliographical and editorial assistance of *Karl A. Baer*, Bibliographer, Army Medical Library, Washington, D. C. 479 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1953. Price $10.50.

This impressive volume, edited under the able direction of Dr. Webb Haymaker, consists of 133 sketches and portraits of pioneers in the field of neurology. Included are such names as Meynert, Purkinje, Pavlov, Goltz, Brissaud, Cushing, Frazier, and Elsberg. While the aim of the book is "to weave into the text a running history of neurology rather than having it consist merely of a series of disconnected biographies," it nevertheless "memorializes those whose patient, investigative efforts and brilliant incisive reasoning have penetrated the darkness of the neural jungle." Prepared by 84 present-day neurologists, these sketches represent all the neurologic disciplines: anatomy, physiology, pathology, neurosurgery, and clinical neurology. The vast resources of the Armed Forces Institute of Pathology and the Army Medical Library were available for this collaborative effort.

The volume was conceived in 1948 and prepared to serve as a *vade mecum* to an exhibit sent to the Fourth International Neurological Congress by the Armed Forces Institute of Pathology. Although publication was delayed, it will be welcomed now by a wide audience including both scholar and layman for whom it will become a basic reference. Author and reader alike will share a sense of gratitude to the publisher for the professional skill with which he has produced the volume.

—*M. M. Link, Ph. D.*

The Autonomic Nervous System, by *Albert Kuntz*, Ph. D., M. D., Professor of Anatomy in St. Louis University School of Medicine. 605 pages; illustrated. 4th edition, thoroughly revised, with 94 illustrations. Lea & Febiger, Philadelphia, Pa., publishers, 1953. Price $10.

This standard reference textbook has been revised and in part rewritten. The first 400 pages are devoted to gross anatomy, histology, physiology, and histopathology of the autonomic nervous system. It is discussed as a whole and then in greater detail as it pertains to the heart, blood vessels, respiratory system, gastrointestinal tract, urinary tract, endocrine glands, genital tract, skin, and skeletal muscles. The presentation and illustrations are excellent. The author presents basic concepts and experimental work as well as recent advances up to 1952. The remainder of the text is devoted to chapters on visceral sensitivity and referred pain, autonomic imbalance, the autonomic nervous system in disease, and surgery of the autonomic nervous system. The chapter on disease appears to overemphasize the role of the autonomic nervous system and is based largely on experimental work and theories promulgated prior to 1940. No mention is made of Selye's contribution. Most physicians do not accept the theory that Addison's disease is due to dysfunction of the autonomic nervous system or that production of antibodies is a function of this system. The bibliography is extensive and complete.

—Col. F. H. Mowrey, MC, USA

Veterinary Dermatology, by *Frank Kral*, V. M. D., M. V. D. (h. c.), Doc. habil., Associate Professor of Veterinary Medicine, University of Pennsylvania, Philadelphia, Pa. Associate author, *Benjamin J. Novak*, Ed. D., Chairman, Science Department, Murrell Dobbins Vocational-Technical School, Philadelphia; Lecturer, Temple University, Philadelphia, Pa. Introduction by *John D. Beck*, V. M. D., Professor of Veterinary Medicine, University of Pennsylvania, Philadelphia, Pa. 325 pages; 162 illustrations in 124 figures. J. B. Lippincott Co., Philadelphia, Pa., publishers, 1953. Price $10.

This is an excellent and long-needed text on a subject that is of great importance in the field of veterinary medicine, and is the first to be printed in the English language. The book has a brief appendix and both bibliographic and subject indexes.

The 21 chapters present the general subject of veterinary dermatology in all its phases in domestic animals. The early discussions are devoted to such basic considerations as the examination of the skin and the classification of skin disorders. Subsequent chapters deal with more specific topics such as eczema, otitis externa in dogs, drug eruptions, photosensitization, skin tumors, and functional diseases of the skin. Four chapters are concerned with the skin manifestations of various diseases caused by viruses, bacteria, fungi, and protozoa, while the last three chapters cover the dermatoses associated with meta-

zoan parasites. Symptoms, prognosis, and treatments are given for the various conditions described. The material presented is authoritative, well referenced, and up to date. For example, the current vesicular exanthema epizootic is discussed and the various subjects are handled with a desirable degree of brevity.—*Lt. Col. K. H. Willers, VC, USA*

Sacral Nerve-Root Cysts, Another Cause of the Sciatic or Cauda Equina Syndrome, by *I. M. Tarlov*, M. D., Professor of Neurology and Neurosurgery, New York Medical College, New York, N. Y. 134 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1953. Price $6.50.

This is a well-written monograph on the pathology, clinical diagnosis, and treatment of perineurial cysts. This condition is presented as a possible explanation for the symptoms that are frequently attributed to ruptured nucleus pulposus. The avowed purpose of the monograph is to sharpen the awareness of physicians to the existence of such cysts, with the hope that they will be discovered more frequently. The author postulates that these cysts, which are usually attached to the sacral nerve roots within the sacral canal, are the result of previous perineurial hemorrhages that, in turn, have been caused by systemic disease or trauma. The pathologic findings have been thoroughly studied. Clinically the symptoms vary from those of lower lumbar root involvement to those of lower sacral root involvement. They may be accompanied by roentgenographic evidence of thinning of the roof of the sacrum, by tenderness over the sacrum, and occasionally by myelographic evidence. It is suggested that when discovered the treatment of choice for a single cyst is total excision, whereas in multiple cysts, piece-meal excision with sparing of the roots should be practiced. The author states that usually there is complete relief from symptoms.

—*Comdr. H. S. Colony, MC, USN*

Diuretic Therapy, The Pharmacology of Diuretic Agents and the Clinical Management of the Edematous Patient, by *Alfred Vogl*, M. D., Assistant Professor of Clinical Medicine, New York University College of Medicine; Associate Visiting Physician, Third Medical Division, Bellevue Hospital; Associate Visiting Physician, Medical Division Metropolitan Hospital, New York, N. Y.; Formerly, Associate Visiting Physician, Policlinic Hospital, Vienna, and Clinical Assistant, Guy's Hospital Medical School, London. 248 pages; illustrated. The Williams & Wilkins Co., Baltimore, Md., publishers, 1953. Price $5.

The author of this treatise was the first physician to observe the diuretic effect of an organic mercurial compound which was being used for the treatment of syphilis. Since that observation, diuretic therapy has become of major importance in the management of many conditions where water retention by the body is a factor. He systematically discusses the causes of edema formation, the physiologic changes that occur, and the role of

the kidney and sodium retention in this condition. He reviews the pharmacology of diuretic drugs and the antidiuretic agents. The organic mercurials are discussed in detail. Such complications as the low salt syndrome, hypochloremic alkalosis, hypokalemia, and other side effects are briefly but adequately covered. The bibliography contains 725 references.

This book is an excellent reference for physicians interested in the etiology and therapy of fluid retention.

—*Col. D. O. Lynn, MC, USA*

Gout and Gouty Arthritis, Modern Medical Monographs No. 7, by *John H. Talbott*, M. D., Professor of Medicine, The University of Buffalo School of Medicine; Physician-in-Chief, Buffalo General Hospital, Buffalo, N. Y. 92 pages; illustrated. Grune & Stratton, Inc., New York, N. Y., publishers, 1953. Price $4.

This volume presents a review of the recent advances in the knowledge of gout and purine metabolism, in compact and readily accessible form with emphasis on its clinical aspects. The scope is more comprehensive than that given this subject in recent textbooks of medicine, but less detailed than that in some special texts on metabolism and in systems of medicine. An adequate bibliography of 88 references and an index are included.

Controversial issues are clearly indicated and the author fairly states his own position. He favors the belief that the increased formation of uric acid without initial decreased renal excretion is the primary metabolic defect in gout, and that hormonal imbalances play a secondary role, if any. The concept of the "miscible pool" of uric acid, which the author and his coworkers have done much to develop, and the broad assumptions upon which it is based, are clearly presented. However, no consideration is given to the concept of diffusible vs. protein-bound uric acid held by Adlersberg and others. Twenty-four excellently selected and reproduced roentgenograms are included, and the author wisely emphasizes the nonspecificity of many of the findings. Therapy of gout is extensively considered. The author agrees with most authorities, that colchicine is still the agent of choice in acute gout, and that cinchophen has no place in the therapeutic armamentarium. Contrary to most writers, and justified by his extensive personal experience, he advocates the use of small doses of colchicine in interim or "intercritical" gout. Less stringent dietary restrictions are advocated now than in former years.

The format of the book is attractive and an excellent summarization of currently recognized fact and theory on the subject is presented.—*Lt. Col. F. J. Hughes, Jr., MC, USA*

Complete Denture Prosthesis, by *Rudolph O. Schlosser,* D. D. S., F. A. C. D., Professor, Emeritus, Northwestern University School of Dentistry, Chicago; Consultant at Veterans Administration Hospital, Hines, Ill., and *Daniel H. Gehl,* D. D. S., Professor of Denture Prosthesis, Marquette University School of Dentistry, Milwaukee. 3d edition. 511 pages; illustrated. W. B. Saunders Co., Philadelphia, Pa., publishers, 1953.

This edition embodies a number of revisions and additions designed to conform with the present-day concepts of denture construction. Important are the changes in the chapters dealing with secondary or final denture impressions, the vertical dimension of the denture space, the centric and other positional relations of the jaws, the selection and arrangement of the teeth, and the technical phases relating to the processing of acrylic denture resins.

There are 24 chapters arranged in an orderly fashion, beginning with the "Objectives of Denture Construction" and proceeding through a discussion of oral anatomy and physiology in relation to total body metabolism, and the mechanics of denture construction, tooth selection, and the maintenance of dentures.

In the chapter concerned with the making of prosthesis for edentulous persons with anomalies, case reports of unusual conditions are included with a discussion as to cause and possible corrective measures.

I recommend this book highly as presenting an excellent coverage of the subject of complete denture prosthesis.

—*Col. J. L. Bernier, DC, USA*

The Dynamics of Psychosomatic Dentistry, by *Joseph S. Landa,* D. D. S., and *six contributors.* 435 pages. Dental Items of Interest Publishing Co., Inc., Brooklyn, N. Y., publishers, 1953

This book surveys the medical and dental specialist's professional obligation to properly integrate, treat, and analyze man's physical ailments by a better study and understanding of the total personality involved. It is composed of 42 chapters and has six distinguished contributors. The contents thoroughly cover the entire field of psychosomatics in dentistry with the exception of hypnotherapy and hypnosis. The latter are treated lightly, but there are several well-known books devoted almost entirely to these phases of psychosomatics.

The book fills a much needed void, in pointing out the necessity for more complete understanding of psychosomatics in dentistry. All dentists should benefit by reading this work and find it most valuable. It is recommended with enthusiasm, especially to the younger practitioner.—*Lt. Col. W. B. Simms, DC, USA*

BOOKS RECEIVED

Surgery of Trauma, edited by *Warner F. Bowers,* Colonel, MC, USA, formerly Chief Surgical Consultant, Office of the Surgeon General; with forewords by *Melvin A. Casberg,* M. D., Chairman, Armed Forces Medical Policy Council; and *Surgeons General of the Army, the Navy and the Air Force.* 605 pages; 284 illustrations. J. B. Lippincott Co., Philadelphia, Pa., publishers, 1953. Price $15.

Nutrition in Health and Disease, by *Lenna F. Cooper,* B. S., M. A., M. H. E., Sc. D., Consulting Dietitian and Formerly Chief of the Department of Nutrition, Montefiore Hospital, New York City; Formerly Food Director, University of Michigan; Dean of School of Home Economics, Battle Creek College; and Supervising Dietitian, U. S. Army, World War I; President, American Dietetic Association, 1937-1938; *Edith M. Barber,* B. S., M. S., Writer and Consultant, Food and Nutrition; Food Editor, General Features Syndicate; Formerly Food Editor, New York Sun; and Lecturer on History of Cookery and Public Relations for Home Economists, Teachers College, Columbia University; *Helen S. Mitchell,* A. B., Ph. D., Dean of the School of Home Economics, University of Massachusetts; Formerly Research Professor of Nutrition, University of Massachusetts; Principal Nutritionist, Office of Defense Health and Welfare Services; and Professor of Physiology and Nutrition, Battle Creek College; and *Henderika J. Rynbergen,* B. S., M. S., Associate Professor of Science, Cornell University-New York Hospital School of Nursing; Formerly Director of Dietetics, American University Hospital, Beirut, Lebanon; Food Clinic Dietitian, Vanderbilt Clinic, Presbyterian Hospital, New York; Food Clinic Dietitian, Barnes Hospital, St. Louis; and Nutritionist, Community Health Association, Boston. 12th edition. 790 pages; 130 illustrations, 5 in color. J. B. Lippincott Co., Philadelphia, Pa., 1953. Price $4.50.

Psychosomatic Approach to Gynecology and Obstetrics, by *Fritz Wengraf,* M. D., Adjunct Neuropsychiatrist, Beth Israel Hospital, New York, N. Y. American Lecture Series, Publication Number 164, A Monograph in the Bannerstone Division of American Lectures in Gynecology and Obstetrics, edited by *E. C. Hamblen,* B. S., M. D., F. A. C. S., Professor of Endocrinology; Associate Professor of Obstetrics and Gynecology, Duke University School of Medicine; Chief of the Division of Endocrinology and Endocrinologist, Duke Hospital, Durham, N. C. 346 pages. Charles C Thomas, Publisher, Springfield, Ill., 1953. Price $6.75.

Endocrinology in Clinical Practice, edited by *Gilbert S. Gordan,* M. D., Ph. D., Assistant Professor of Medicine, University of California School of Medicine, and *H. Lisser,* M. D., Clinical Professor of Medicine and Endocrinology, and Chief, The Endocrine Clinic, University of California School of Medicine; Former President, Association for the Study of Internal Secretions (Now The Endocrine Society). 407 pages; illustrated. The Year Book Publishers, Inc., Chicago, Ill., 1953. Price $10.50.

Handbook of Dietetics for Nurses, by *Catherine F. Harris,* S. R. N., Dietetic Diploma, R. C. N., Chief Therapeutic Dietitian, University College Hospital; foreword by Professor *S. J. Cowell,* M. B., F. R. C. P., Professor of Dietetics, University College Hospital Medical School. 196 pages; illustrated. The Williams & Wilkins Co., Baltimore, Md., publishers, 1953. Price $4.

Problems in the Anatomy of the Pelvis, an Atlas, by *Eduard Uhlenhuth,* Ph. D., Professor of Anatomy, University of Maryland, School of Medicine; with the assistance of *DeWitt T. Hunter,* M. D., Instructor in Anatomy; illustrated by *William E. Loechel,* Medical Artist in the Department of Anatomy. 206 pages; 82 illustrations. J. B. Lippincott Co., Philadelphia, Pa., publishers, 1953. Price $10.

Slipped Capital Femoral Epiphysis, by *Armin Klein,* M. D.; *Robert J. Joplin,* M. D.; *John A. Reidy,* M. D.; and *Joseph Hanelin,* M. D., Massachusetts General Hospital, Boston, Mass. American Lecture Series, Publication Number 153, A Monograph in American Lectures in Roentgen Diagnosis, edited by *Aubrey O. Hampton,* M. D., Chief, Department of Radiology, Garfield Memorial Hospital, Washington, D. C. 130 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1953. Price $6.75.

Parodontal Disease, A Manual of Treatment and Atlas of Pathology, by *E. Wilfred Fish,* C. B. E., M. D. (Manch.), D. D. Sc. (Melb.), D. Sc. (Lond.), F. D. S., R. C. S. (Eng.), Dental Surgeon, St. Mary's Hospital, Paddington, London. 2d edition. 252 pages; illustrated. J. B. Lippincott Co., Philadelphia, Pa., publishers, 1953. Price $6.75.

Peptic Ulcer, Pain Patterns, Diagnosis and Medical Treatment, by *Lucian A. Smith,* A. B., M. D., M. S. in Medicine, F. A. C. P., Assistant Professor of Medicine, Mayo Foundation; Head of Section, Division of Medicine, Mayo Clinic, and *Andrew B. Rivers,* M. A., M. D., M. S. in Medicine, F. A. C. P., Late Associate Professor of Medicine, Mayo Foundation; Consultant, Division of Medicine, Mayo Clinic, Rochester, Minn.; foreword by *George B. Eusterman.* 576 pages; illustrated. Appleton-Century-Crofts, Inc., New York, N. Y., publishers, 1953.

Inhalation Therapy and Resuscitation, by *Meyer Saklad,* M. D., Director, Department of Anesthesiology, Rhode Island Hospital, Providence, R. I. American Lecture Series, Publication Number 156, A Monograph in the Bannerstone Division of American Lectures in Anesthesia, edited by *John Adriani,* M. D., Director, Department of Anesthesia, Charity Hospital, New Orleans, La. 343 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1953. Price $7.50.

Operative Surgery, Volumes I and II, by *Guy W. Horsley,* B. S., M. D., F. A. C. S., Associate Professor of Surgery, Medical College of Virginia; Attending Surgeon, St. Elizabeth's Hospital, Richmond, Va., and *Isaac A. Bigger,* M. D., F. A. C. S., Professor of Surgery, Medical College of Virginia; Surgeon-in-Chief, Medical College of Virginia Hospitals, Richmond, Va.; 6th edition. 1,579 pages; illustrated by *Helen Lorraine.* The C. V. Mosby Co., St. Louis, Mo., 1953.

The Role of Growth Hormone in Carbohydrate Metabolism, by *R. C. De Bodo* and *M. W. Sinkoff,* Department of Pharmacology, New York University College of Medicine, New York, N. Y. Originally published in the Annals of the New York Academy of Sciences, Volume 57, Article 2, pages 23-60. The New York Academy of Sciences, New York, N. Y., 1953. Price $1.

Transactions of the New York Academy of Sciences, edited by *Roy Waldo Miner.* Ser. II, Vol. 15, No. 7, May 1953. 261 pages. The New York Academy of Sciences, Baltimore, Md., 1953. Price $0.60.

Stress Incontinence in the Female, by *John C. Ullery*, M. D., F. A. C. S., F. I. C. S., Obstetrician and Gynecologist, Pennsylvania Hospital; Assistant Professor in Obstetrics and Gynecology, Jefferson Medical College; Associate in Gynecology and Obstetrics, Graduate School, University of Pennsylvania; Chief of Obstetrics and Gynecology, Philadelphia General Hospital; Chief of Obstetrics and Gynecology, Delaware County Hospital, Drexel Hill, Pa. 149 pages; illustrated. Grune & Stratton, Inc., New York, N. Y., 1953. Price $6.75.

Multiple Myeloma, by *I. Snapper*, M. D., Director of Medical Education, Cook County Hospital, Chicago, Ill.; Formerly, Director of Medical Education, Mount Sinai Hospital, New York, N. Y.; *Louis B. Turner*, M. D., Research Assistant in Medicine, Mount Sinai Hospital, New York, N. Y.; and *Howard L. Moscovitz*, M. D., Resident, Second Medical Service, Mount Sinai Hospital, New York, N. Y. 168 pages; illustrated. Grune & Stratton, Inc., New York, N. Y., 1953. Price $6.75.

Atomic Medicine, edited by *Charles F. Behrens*, M. D., Rear Admiral, MC, U. S. Navy, Staff Medical Officer, Eastern Sea Frontier; Formerly: Director, Atomic Defense Division, Bureau of Medicine and Surgery, Navy Department; Commanding Officer, Naval Medical Research Institute, National Naval Medical Center, Bethesda, Md. 2d edition. 632 pages; illustrated. The Williams & Wilkins Co., Baltimore, Md., 1953. Price $11.

Mechanism of Corticosteroid Action in Disease Processes, by *Oscar Hechter* and *Gregory Pincus* (Conference Chairmen); *S. M. Aronson, D. H. Baeder, B. L. Baker, W. R. Barclay, J. R. Bergen, M. M. Black, A. J. Butt, E. Cardona-Lynch, A. M. Dannenberg, Jr., A. Dorfman, T. F. Dougherty, R. H. Ebert, W. E. Ehrich, M. Finland, S. C. Freed, M. Friedman, G. P. Fulton, J. Gross, E. A. Hauser, H. Hoagland, C. Hunt, E. H. Kass, M. I. Kendrick, C. LeMaistre, L. M. Leonard, M. M. Lundgren, M. B. Lurie, W. McDermott, R. C. Mellinger, J. W. Rebuck, H. J. Robinson, R. H. Rosenman, D. D. Rutstein, S. S. Schneierson, J. Seifter, E. Shorr, M. H. Shulman, G. Shwartzman, A. Slocombe, A. L. Smith, H. C. Stoerk, M. Paubenhaus, L. Thomas, R. Tompsett, L. C. Wyman, P. Zappasodi*, and *B. W. Zweifach*. Originally published in the Annals of the New York Academy of Sciences, Volume 56, Article 4, pages 623-814. The New York Academy of Sciences, New York, N. Y., 1953. Price $3.50.

Holt Pediatrics, by *L. Emmet Holt, Jr.*, Professor of Pediatrics, New York University College of Medicine; Director, Children's Medical Service, Bellevue Hospital, New York City and *Rustin McIntosh*, Carpentier Professor of Pediatrics, Columbia University; Director of the Pediatric Service in the Babies Hospital, New York, N. Y. 12th edition. 1,485 pages; illustrated. Appleton-Century-Crofts, Inc., New York, N. Y., 1953. Price $15.

Adrenal Cortex, Transactions of the Fourth Conference, November 12, 13, and 14, 1952, New York, N. Y., edited by *Elaine P. Ralli*, M. D., Associate Professor of Medicine, College of Medicine, New York University, New York, N. Y. 165 pages; illustrated. Sponsored by *Josiah Macy Jr. Foundation*, New York, N. Y. Printed in the U. S. of America by Foundation Press Inc., Packanack Lake, N. J. Price $3.50.

Aspects of the Psychology of the Tuberculous, A Psychosomatic Medicine Monograph, by *Gordon F. Derner*, Ph. D., Associate Professor of Psychology and Director of Clinical Psychology Training Program, Adelphi College, Garden City, N. Y. 119 pages; illustrated with charts. Paul B. Hoeber, Inc., New York, N. Y., 1953. Price $3.50.

Injuries of the Spinal Cord, edited by *George C. Prather*, M. D., F. A. C. S., and *Frank H. Mayfield*, M. D., F. A. C. S. 396 pages; illustrated. Charles C Thomas, Publisher, Springfield, Ill., 1953. Price $8.75.

The Action of Insulin, by *Niels Haugaard*, Ph. D., Assistant Professor of Physiological Chemistry in Research Medicine, School of Medicine University of Pennsylvania, Philadelphia, Pa., and *Julian B. Marsh*, M. D., Assistant Professor Physiological Chemistry, Graduate School of Medicine, University of Pennsylvania, Philadelphia, Pa. American Lecture Series, Publication Number 194, A Monograph in American Lectures in Endocrinology, edited by *Willard O. Thompson*, M. D., Clinical Professor of Medicine, University of Illinois College of Medicine; Managing Editor, Journal of Clinical Endocrinology and Metabolism; Editor, Journal of the American Geriatrics Society, Chicago, Ill. 113 pages; illustrated with graphs and charts. Charles C Thomas, Publisher. Springfield, Ill., 1953. Price $3.75.

Thoracic Surgery and Related Pathology, by *Gustaf E. Lindskog*, B. S., M. A., M. D., F. A. C. S., William H. Carmalt Professor of Surgery, Yale University School of Medicine; Surgeon-in-Chief, University Service, Grace-New Haven Community Hospital, and *Averill A. Liebow*, B. S., M. D., Professor of Pathology, Yale University School of Medicine; Pathologist-in-Chief, University Service, Grace-New Haven Community Hospital. 644 pages; illustrated. Appleton-Century-Crofts, Inc., New York, N. Y., 1953. Price $15.

The Team Plan, A Manual for Nursing Service Administrators, by *Dorothy Perkins Newcomb*, R. N., B. S., Assistant Director of Nursing Service, Massachusetts General Hospital, Boston, Mass. Foreword by *Ruth Sleeper*, R. N., M. A., L. H. D. 82 pages; illustrated. G. P. Putnam's Sons, New York, N. Y., 1953. Price $1.50.

Surgical Pathology, by *Lauren V. Ackerman*, M. D., Professor of Surgical Pathology and Pathology, Washington University, School of Medicine; Surgical Pathologist, Barnes Hospital and Affiliated Hospitals, St. Louis; Consultant to the Ellis Fischel State Cancer Hospital, Columbia, Mo.; Consultant to the Armed Forces Institute of Pathology. 836 pages with 913 illustrations. The C. V. Mosby Co., St. Louis, Mo., 1953. Price $14.50.

Roentgen Diagnosis of the Heart and Great Vessels, by *Erich Zdansky*, M. D., Professor of Roentgenology, University of Vienna and Director of the Central Roentgen Institute of the Allgemeinen Krankenhaus; translated by *Linn J. Boyd*, M. D., F. A. C. P., Professor and Director of Medicine, the New York Medical College, Flower and Fifth Avenue Hospitals. 1st American edition; new enlarged revision. 499 pages; illustrated. Grune & Stratton, Inc., New York, N. Y., 1953. Price $15.50.

Respiratory Diseases and Allergy, New Method of Approach, by *Josef S. Smul*, M. D., Author of Digestive Diseases and Food Allergy; Fellow, National Gastroenterological Association; Member, New York Academy of Sciences; Formerly: Vice President, Manhattan Roentgen Ray Society; Associate, Gastroenterology, Beth David Hospital, New York, N. Y.; Clinical Assistant Physician, Beth Israel Hospital, New York, N. Y. 80 pages. Medical Library Co., New York, N. Y. Price $2.75.

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